JOURNAL

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INDIAN MEDICAL ASSOCIATION

VOLUME 37 NUMBER 6 CALCUTTA SEPTEMBER 16, 1961

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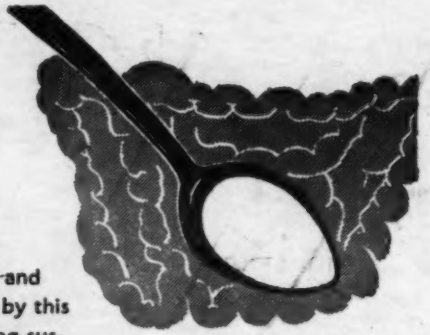

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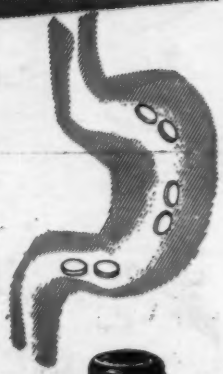

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JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

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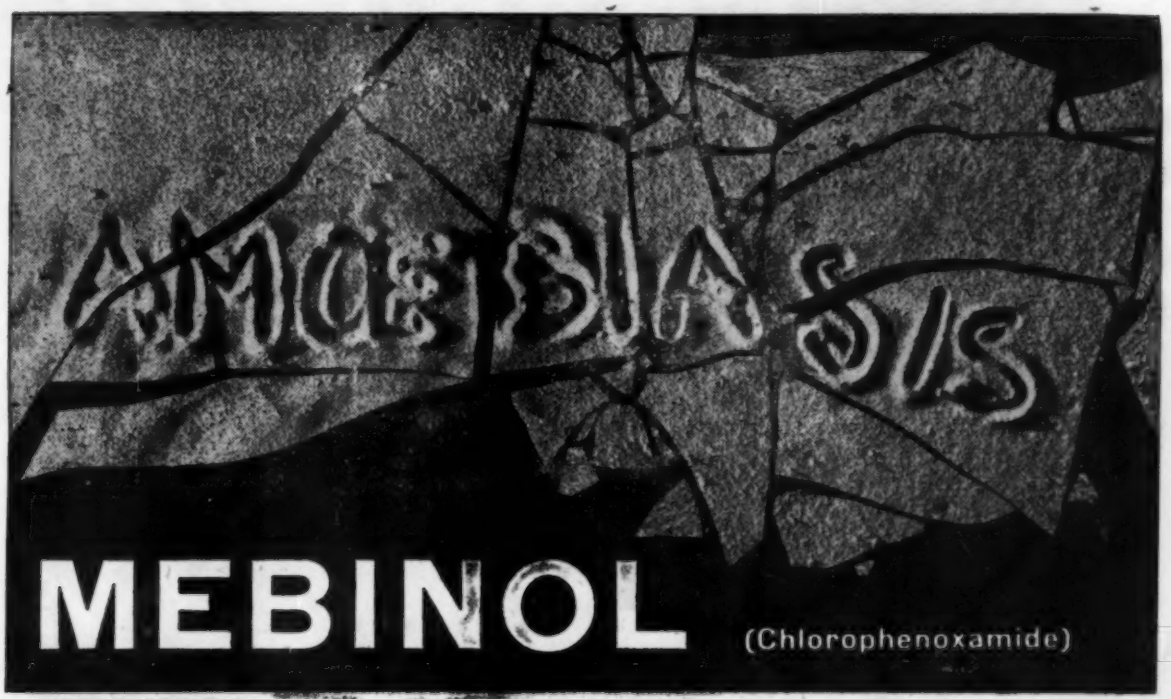

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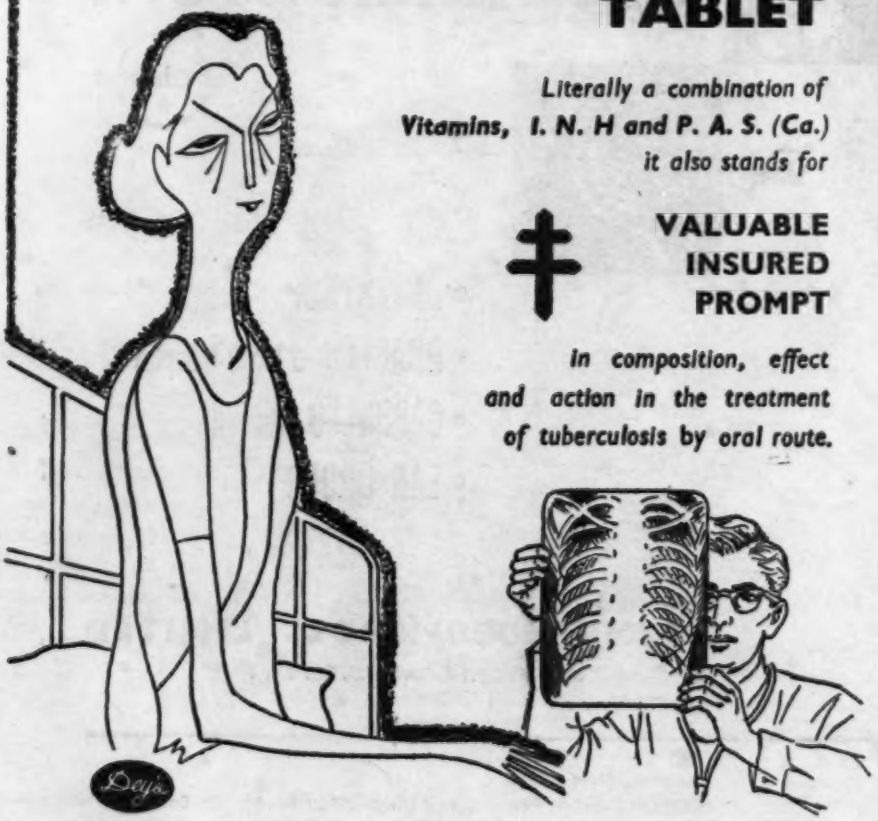

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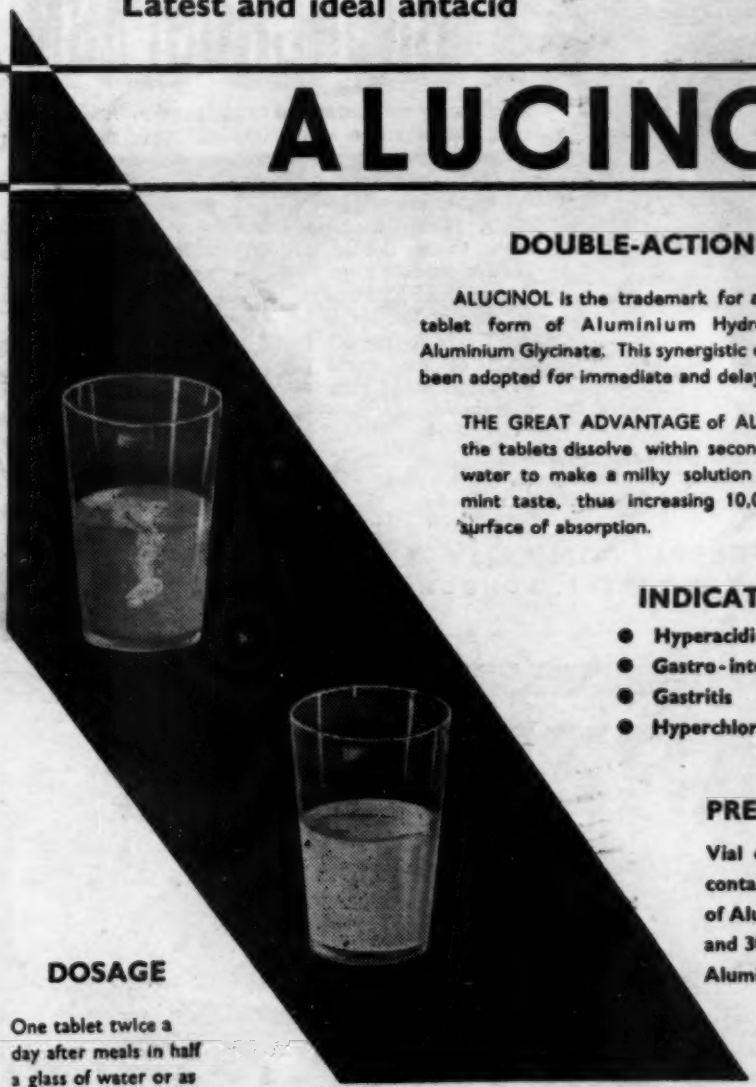

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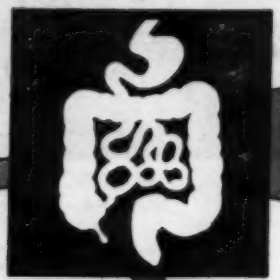

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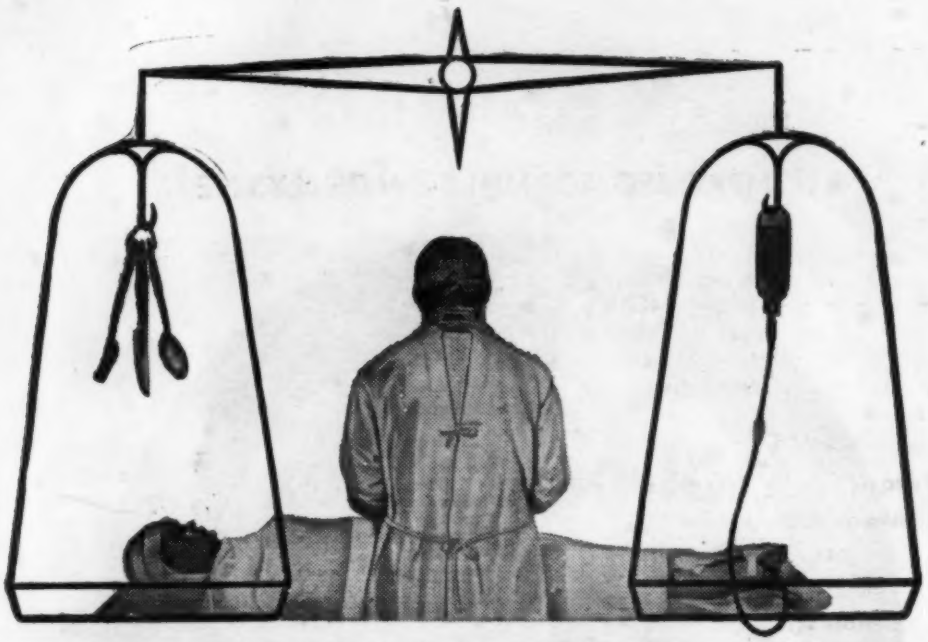

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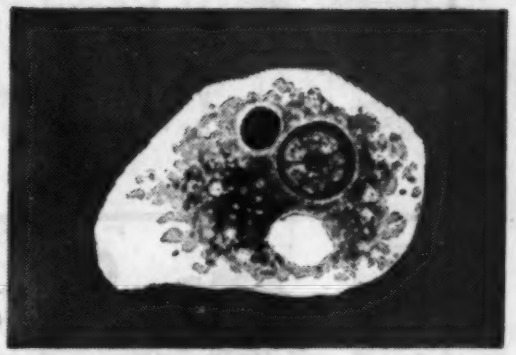

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2 Zavala, D. C., and Hamilton, H. E. : *Ann. Int. Med.*, 36 : 110, Jan., 1952
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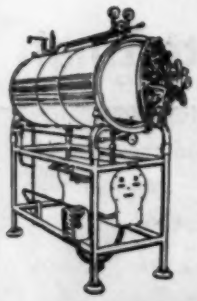

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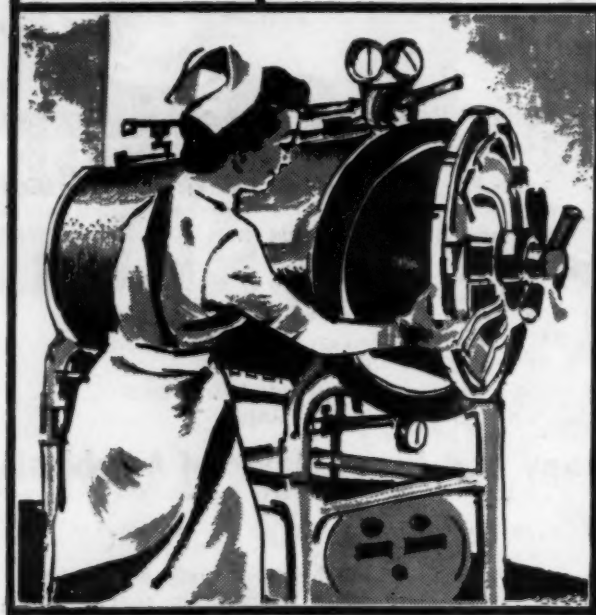

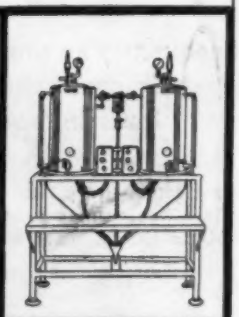

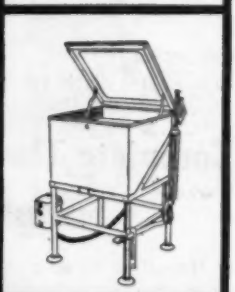

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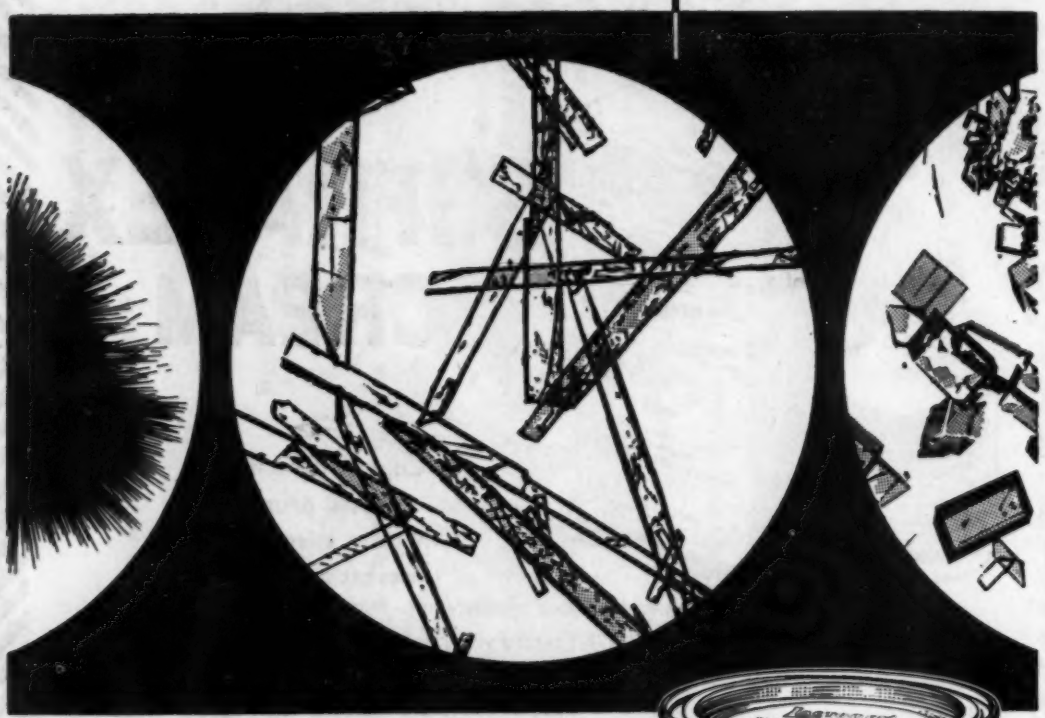

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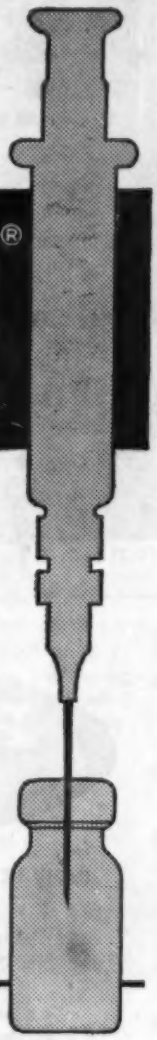

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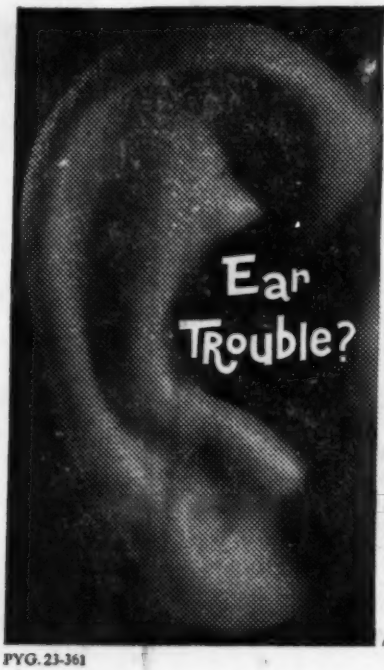

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ORIGINAL ARTICLES

THE MENARCHE IN BENGALEE HINDU GIRLS

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The term 'menstruation' is of very ancient vintage. It has been used a number of times, even in the Bible, many centuries before we had any knowledge of ovulation or of hormones. The old conception of 'menstruation' as manifestation of a local uterine process has been discarded. It has now been established that there occur cyclic structural changes in the ovaries, as well as in the endometrium, which are intimately related to simultaneous systemic changes of the entire organic structure of women,—changes which modify all metabolic activities and even the chemical constitution of body fluids. The menstrual function has been recognised as a periodic local and general systemic preparation for impregnation. In this paper we have used the term 'menstruation' to designate the physiological process which between menarche and menopause periodically prepares a woman for the implantation of a fertilised ovum.

The term 'menarche' (μην, a month, αρχη the beginning) was introduced into medical literature by Kisch (1910), to denote the period of life in which, as a sign of puberty, menstruation first makes its appearance.

Definition—The terms 'adolescence,' 'puberty' and 'menarche' are sometimes used loosely as being synonymous. Adolescence (Latin *adolescere* =to grow) is the period of life during which the care-free child becomes the responsible adult. Puberty (Latin *pubertas* = adulthood) is the growth phase characterised by physical and sexual differentiation and by the onset of activity of sexual organs. The menarche (Greek month + origin) is the onset of menstruation and is merely one manifestation of puberty (Jeffcoate, 1957).

The menarche in girls is the culmination of an endocrinal development which starts about five years before puberty (Curtis, 1947).

Puberty in either sex is the time at which reproduction becomes possible. The term 'menarche' refers to the first menstrual bleeding. Being only one of the many pre-requisites of fertility, menarche is generally recognised as an objective indicator of the onset of puberty (Selye, 1950).

The menarche as an important episode on the milestones of a woman's life is followed by a sequence of manifestations of adolescence, summed up by Gessel *et al* (1956) under the sections of (a) maturity traits and (b) maturity trends. The psychological changes which synchronise with the menarche are brought out in the epigrammic comment of Jeffcoate (1957) "the happy-go-lucky 'tomboy' becomes the Juliet".

Mechanism of menarche—The menarche connotes both the beginning of stabilisation of the pituitary-ovarian mechanism and the newly acquired ability of the uterus to respond to hormonal stimulation. According to Selye (1950) the phenomena of puberty are due to an increase in the gonadotrophin secretion of the anterior lobe of the pituitary. This causes maturation of the gonads, with increased secretions of gonadal hormones which in turn affect the accessory sex organs as well as somatic and psychic development in general. Gonadotrophic and gonadal hormone production is by no means absent before puberty. But Read and McLeod (1955) admit that little is known as to what controls the trigger mechanism of the anterior pituitary ; probably activation of a hypothalamic centre follows the attainment of a certain degree of general maturity. The timing of this activation coincides possibly more closely with general bodily maturity, as indicated by the bone age than with chronological age.

Importance of the age of menarche—A knowledge of the ages of menarche of our population is important in the study of adolescent sterility interval. It is also an essential factor in any study on growth. A correct appraisal of the age of menarche of our girls is a pressing need, without which no social law, especially those relating to marriage can be made. A shift in the age of menarche signifies a concurrent change in the factors asociatsed with it, viz., the premenarcheal acceleration, the sterility interval, the first conception and the like.

Rituals relating to menarche in Bengal—It is interesting to note that the onset of menstruation in Bengalee girls still is observed today with some ceremonial rites, which can be traced as far back as Sushruta. Sushruta laid down certain disciplines and restrictions to be observed during the menstrual period, including those relating to food, physical activities, clothings, toiletries, etc. and also prohibited cohabitation during menstruation. Hindu women are debarred from actively participating in any religious ceremonies and entering into temple for offering during menstrual periods. No less mentionable are the expensive ceremonies of 'punarbie' (second marriage) and 'garvadhan'. Many unscientific rites are despised as bad customs. All these socio-ritual customs are no longer followed now-a-days, and some have survived only in a modified form, which vary among different social classes, in different parts of the state.

Objectives of the present study—In the face of the above prologue, the study of the onset of menstruation should elicit a correct response to an enquiry of the age at menarche. But clinical experience and the study of anthropological statistics combined with a punctilious search on the menarcheal age in available literature have placed before us a dismal reading. The trend of the menarcheal age in Bengalee (even Indian) girls is not unequivocally clear and a shift in it is not beyond dispute. These led us to undertake an enquiry on the age at menarche in Bengalee girls, to find out the parameters of the age distributions and to study them in relation to the findings of previous investigators. We have also considered it worth while to review the factors influencing the age and of variations in the age at menarche from available literature with special reference to Indian authors.

Review of Factors Influencing the Menarcheal Age

Kisch (1910) observed that in girls of the Semitic races the menarche occurs earlier than in those of the Aryan races. Kennedy (1933) from a study of 10,000 cases in Italy and U.S.S.R. failed to show any relation between climatic condition and the age of menarche. But Norwegian statistics (Manuel, 1957) show the influence of climate on the age of menarche. Pellers (1933), an authority on biometrical studies, considered he above factor to be of lesser importance. Psychic factors like excitement of a birth day party are often found to be associated with immediate onset of menarche, of course, in a previously physically developed girl. Diet, environment, occupation are equally important. Ehrenfest (1937) made a critical review of the literature concerning factors influencing the onset of menarche. He compiled the opinions of different observers on climate, race, environment, constitution, heredity, abnormality in pelvic organs, diseases etc. Mazer and Israel (1946) pointed out that the question of influence of diet and hygiene in initiating menstruation at an earlier age was no longer debatable. Climate is also an important factor, the temperate zones being conducive to an earlier menarche. Curtis (*loc. cit.*) observed that menstruation occurred earlier in warm climates. Constitution, race and heredity are other important influences which determine the onset of menstruation. Earlier menstruation is found among Jewesses than among gentiles. Blondes establish menstruation on an average a year later than brunettes. Selye (*loc. cit.*) mentioned that factors influencing the development of puberty include (a) race (b) climate (c) heredity and (d) psychic. Malnutrition and chronic diseases tend to delay the onset of puberty. Wilson and Sutherland (1950) from a study of 289 girls failed to support the contention that the age of menarche was later in the more favoured social and economic

groups or that the height and weight had any influence on the age of menarche. Deutsch (1952) pointed out the effects of psychological factors on menstruation. Smout and Jacoby (1953) remarked that the age of menarche varied greatly in individuals, amongst races and with climates. Read and McLeod (1955) commented that as there were familial and racial differences in the onset of puberty, genetic factors probably determine the level of maturity. Amongst the people in tropical countries generally, sexual maturity is attained as a rule earlier. Climate however, is of lesser importance than racial and genetic factors. Jeffcoate (1957) is of opinion that the age of menarche varies to some extent with family, race, social class and environment but not with climate. But menstruation tends to occur earlier in higher social classes and in urban surroundings. McArthur (1957) stressed the role of heredity in influencing menarcheal age. Menarcheal ages of sisters and those of mothers and daughters are more closely correlated. Menarcheal age is also correlated with body build. Broad built and stocky girls tend to menstruate earlier than tall individuals. In human species summer is the season during which the menarche works least frequently. Shaw (1959) opined that there was considerable variation amongst different races, the age of onset of menarche being earlier in southern countries. Puberty is delayed amongst the agrarian people of the Balkans, where the children have to work strenuously for long periods in the open air. The effect of hard manual work upon menstruation is also seen in this country. It is common for young women to cease menstruating if they change their environment and work strenuously for long hours.

Review of Variations in the Menarcheal Age

(A) FOREIGN AUTHORS :

Chaschinsky and Jerschow (1933) reported the case of a girl in whom menstruation began at the end of her first year. Engle and Shelesnyak (1934) reported that the average age at menarche of 250 girls in the Hebrew Orphan Asylum of New York was 13·5 years, with the extremes ranging between 11 and 16·3 years. Statistics by Kennedy (1936) drawn from 10,219 hospital records showed the age at menarche in Edinburgh to be 15 years, with a S.D. of 1·7—due most probably to the lower living condition of the working class of Scotland. Novak (1944) reported 9 cases of sexual precocity, the youngest being a baby with a menarche at 15 months. Mazer and Israel (*loc. cit.*) mentioned that menarche might normally appear anytime during the period of transition from childhood to maturity—occasionally as early as nine years, often as late as sixteen years, depending upon racial, constitutional and environmental factors. In a study derived from 3,135 of their office records, the average age at menarche was shown to be 13·2 years among 3,104 cases with the extremes ranging between 11 and 16 years, while the remaining 121 patients (3·7 per cent) had their menarche either before 11 or after 16 years. Delee and Greenhill (1947) reported the case of a girl from Lima, Peru who conceived at five and a half years. Curtis (*loc. cit.*) observed that the first menstruation occurred between 11 to 16 years, with an average age of 13 years among American girls. In Continental Europe the average is 1 or 2 years older. Wilson and Sutherland (*loc. cit.*) made a study of 1,707 girls attending one boarding and five day schools in Dorset and one day school in Essex, where average age of menarche was determined by 'probit analysis' which required from each girl only her present age and whether or not menstruation has started. This is more accurate than direct questioning for age of onset. In an earlier study in Oxford average age of day school girls at onset of menarche was 13·6 years.

In the present day school group the average was 13·4 years and in the boarding school 13·9 years. The difference between the groups was significant, suggesting a relation between sexual maturity and social background, since the boarding school girls were generally more well-to-do. Overall figures indicated that the age of menarche followed a normal frequency distribution, in which 1 in 100 would menstruate for the first time before 10 years 9 months and 1 in 100 after 16 years 3 months. In each group, height and weight in any one age group were substantially greater among those who had attained sexual maturity. In a second study serial records of height and weight of 202 Sussex and 87 Yorkshire boarding school girls were taken, with particular interest in the 4 years following menarche. Mean ages of attainment of the menarche, with their S.D. were 13·11±0·09 (Sussex) and 13·82 ±0·14 (Yorkshire). Smout and Jacoby (*loc. cit.*) stated that onset of menstruation was not usually earlier than ten years and was normally between 13 and 16 years. Read and McLeod (*loc. cit.*) held that puberty and pubescence usually started between 10 to 15 years but pubescence most commonly begins at 9 to 10 years and the menarche at 13 to 14 years. The natives of Serbia in Europe as well as those of Sierra Leone in Africa begin to menstruate between 8 and 10 years, while the Eskimos of Alaska and the Arctic Indians

TABLE 1A—SHOWING NO. OF CASES IN DIFFERENT CLASSES IN RELATION TO THEIR AGE OF MENARCHE
Figures in parentheses indicate percentage

Classes	Age of menarche (years)									
	10	11	12	13	14	15	16	17	18	Total
European girls under Indian climatic influences ...	1 (0·9)	8 (6·9)	15 (12·9)	21 (18·2)	35 (30·2)	15 (12·9)	15 (12·9)	5 (4·2)	1 (0·9)	116
Eurasians and East Indians	2 (0·48)	23 (5·5)	78 (18·6)	117 (78·0)	112 (26·8)	62 (14·8)	17 (4·07)	4 (0·95)	3 (0·72)	418

TABLE 1B—SHOWING NO. OF CASES IN DIFFERENT CLASSES IN RELATION TO THEIR AGE OF MENARCHE
Figures in parentheses indicate percentage

Classes	Age of menarche (years)											
	9	10	11	12	13	14	15	16	17	18	19	Total
Indian Hindus and Mohammedans	10 (1·11)	74 (8·29)	296 (33·15)	271 (30·36)	144 (16·13)	56 (6·27)	34 (3·81)	3 (0·33)	2 (0·22)	1 (0·11)	2 (0·22)	893
High society Indian girls ...	—	—	10 (50·0)	8 (40·0)	2 (10·0)	—	—	—	—	—	—	20
Eastern Jewesses ...	—	—	1 (3·12)	2 (6·25)	8 (25·0)	14 (43·75)	5 (15·62)	2 (6·25)	—	—	—	32

commence often before the age of 13 years which is earlier than the usual European figures. Jeffcoate (*loc. cit.*) mentions the first menstrual period as usually occurring between the ages of 10 to 18 years, the average being 13·5 years in Western Europe and 12·5 years in North America. Shaw (1959, *loc. cit.*) stated that the usual age of onset was between 13 to 15 years in Egypt, in Spain, it was between 10 to 12 years, while amongst the Exquimaux the average age of puberty was 23 years.

(B) INDIAN AUTHORS :

Here, one can go as far back as *Sushruta-Samhita* about 500 years before Christ. 'The Rasa (the lymph cycle)' writes Sushruta, 'is transformed into the catamenial flow which commences at the age of 12 and ceases at 50'.

The first Indian data on menarche were collected by Robertson (1845) for different social groups in Bombay, comprising a total of 230 individuals among whom the average age at menarche came out to be 13·6 years. The second set were provided by Gupta (1848) from Hindu Bengalee families of Calcutta. These data comprised 37 women, whose average menarcheal age was determined at $12{\cdot}38 \pm 0{\cdot}11$ years .

The third set of data were compiled by Das from the Medical College (Eden) Hospital, Calcutta, at the instance of Birch (1892) and is presented in Tables 1A and 1B. The results of 913 investigations regarding children of purely Indian parentage and also of a few Jewesses are shown in Table 1B.

Curjel (1920) provided the fourth set of data drawn from different parts of India. She classified them only according to religious communities. Knowing fully well the heterogeneous nature of Indian population, it is difficult to utilise these data for any comparative study. Curjel's figures are shown in Table 2.

TABLE 2—SHOWING NO. OF CASES WITH MEAN AND S.D. OF AGE OF MENARCHE IN DIFFERENT INDIAN COMMUNITIES

Communities	No. of cases	Age of menarche	
		Mean	S.D.
Hindus	268	13·62	1·80
Muslims	140	13·64	1·89
Christians	81	13·69	1·53
Combined average ...	489	13·64	
College girls	56	13·88	1·57

With a view to find out the menarcheal age of Bengalee girls and its differential behaviour in different communities Sen (1953) carried out a survey of this phenomenon amongst various castes in Calcutta and among *'Bagdis'* in the village of Moydah, 24-Parganas, West Bengal. The data were collected by Sen (*loc. cit.*) after

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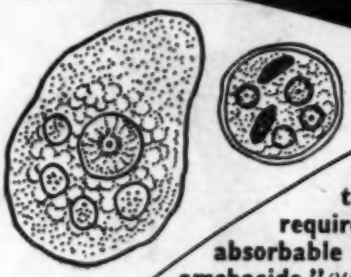

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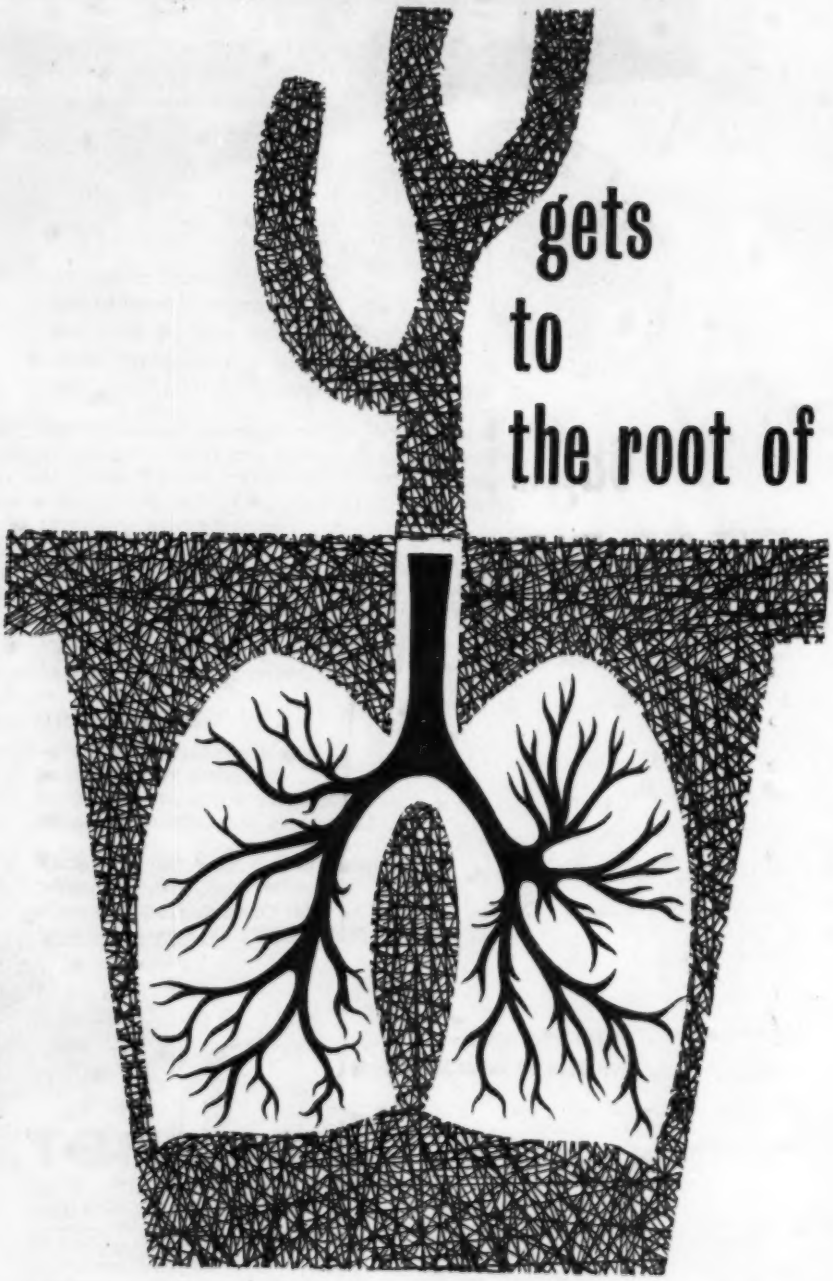
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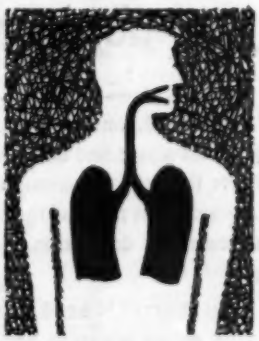

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personal interview in each family. The figures obtained by her are shown in Table 3.

TABLE 3—SHOWING NO. OF CASES WITH MEAN AND S.D. OF AGE OF MENARCHE IN DIFFERENT CASTES OF WEST BENGAL

Castes	No. of cases	Age of menarche	
		Mean	S.D.
Calcutta Brahmins ...	153	12·70	1·28
Calcutta Vaidyas ...	275	12·70	1·38
Calcutta Kayasthas ...	219	12·87	1·16
Total ...	647	12·78	
Bagdis of Moydah ...	60	13·25	1·67

Another sample was collected by Baruah (a Nayar herself) in Travancore, South India, (1953) amongst Nayars (implies a caste). Of 74 cases, the mean age of menarche was 14·29 years with S.D. 1·19.

A survey was also made by Rakshit (1954) on the age of menarche of Assamese girls. Her method was direct enquiry on the exact date of menarche in school girls with the help of school authorities as well as the respective parents. The figures obtained by Rakshit (*loc. cit.*) are given in Table 4.

TABLE 4—SHOWING MEAN AND S.D. OF AGE OF MENARCHE IN DIFFERENT CASTES IN ASSAM

Group	No. of cases	Age of menarche	
		Mean	S.D.
Brahmins	60	12·46	0·99
Kayasthas	32	12·45	1·16
Muslims	29	13·35	0·79
Kalita	17	12·12	1·07
Pooled	138	12·39	1·01

Analysis of variance did not indicate any statistically significant differences in the mean menarcheal ages for different groups.

Three other findings on menarcheal age were read in the Ninth All-India Congress of Obstetrics and Gynaecology, 1956. Baxi (1957) from a study of 529 patients at Municipal General Hospital, Sion, Bombay, reported that the age at menarche was unknown in 114 cases (23·45 per cent). The mean age was 13·78 years with S.D. 1·6 and coefficient of variation 11·61 per cent. Seetha (1957) in a study of 100 Andhra women, in South India, found the average age of puberty to be 13·53 years. Manuel (*loc. cit.*) presented his findings at the Christian Medical College Hospitals, Vellore, South India, which is given in Table 5, without computing any statistical constants.

TABLE 5—SHOWING AGE OF MENARCHE IN YEARS IN THE ANDHRA WOMEN

	Age of menarche (years)								
Age ...	11	12	13	14	15	16	17	18	19
No. of cases ...	3	0	31	46	39	27	19	3	1

MATERIALS AND METHODS

The present investigation relates to patients from a private clinic during the years 1954-60 where each case was interviewed by one of us (D.B.). Most of the patients were Bengalee Hindus and permanent residents of various districts and villages of Bengal and mainly inhabiting in Calcutta and Howrah. The enquiry embraced persons of all socio-economic status and urban as well as rural surroundings. Some of them came from the hilly districts of North Bengal.

Some of the women could not give a definite reply as to when their menstruation began. A study of the nature of response is presented in Table 6.

TABLE 6—SHOWING NO. OF CASES AND NATURE OF RESPONSE

Response						No response
Definite			Doubtful			
In exact age	In 1 year interval	In 2 years interval	In exact age	In 1 year interval	In 2 years interval	
840	175	3	23	6	×	900

Not all the 900 non-responding cases in Table 6 can be truly designated as such. For cases of primary amenorrhoea and congenital abnormalities, where the question of menarcheal age did not arise, were also included in this total.

In this study the age at menarche was ascertained by direct enquiry to the patient or to her mother. The problem of determining the menarcheal age by the method of 'probit analysis', applicable to figures collected in a survey of women, does not arise.

TABLE 7—SHOWING DISTRIBUTION OF MENARCHEAL AGES (IN ½ YEARS) OF 1047 BENGALEE GIRLS

Age at menarche (years)	No. of cases	Age at menarche (years)	No. of cases
9	1	14½	30
9½	3	15	126
10	7	15½	14
10½	6	16	65
11	40	16½	5
11½	6	17	11
12	141	17½	1
12½	64	18	2
13	194	18½	6
13½	65	19	2
14	258		

The exact, distribution of the age at menarche is presented in Table 7. Since menarche is an episode in the patient's life, and since no better guide to the menarcheal age could be available than her memory, we included in the age distribution all the 1,047 cases.

For the discrete distribution, we replaced figures like x to x+1 by x+½ ; x to x+2 by x+1.

In an attempt to fit a continuous distribution, preferably a Pearsonean one, to the obtained age distribution we carried out a suitable grouping of the data. The discrepancy in the mean age due to lumping was considered ; the possible groupings were x+0·25 to x+1·25 (x is integral) and x+0·75 to x+1·75. It was found that the latter grouping gave results close to the exact and hence chosen for further analysis. This has been presented in Table 8.

TABLE 8—SHOWING THE GROUPED CONTINUOUS DISTRIBUTION OF MENARCHEAL AGES

Class-interval	Observed frequencies	Expected frequencies by the normal curve
8·75- 9·75	4	2·53
9·75-10·75	13	16·37
10·75-11·75	46	66·34
11·75-12·75	205	168·56
12·75-13·75	259	268·73
13·75-14·75	288	269·07
14·75-15·75	140	169·10
15·75-16·75	70	66·72
16·75-17·75	12	16·50
17·75-18·75	8	2·56
18·75-19·75	2	0·72

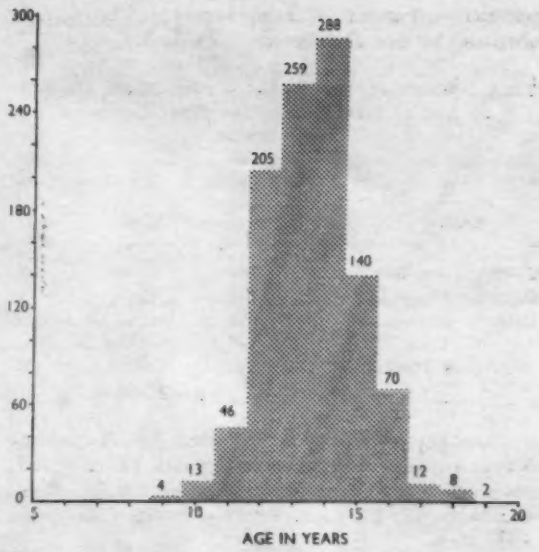

FIG. 1—HISTOGRAM SHOWING MENARCHEAL AGES OF 1,047 BENGALEE GIRLS. THE ORDINATE DENOTES THE NUMBER OF CASES

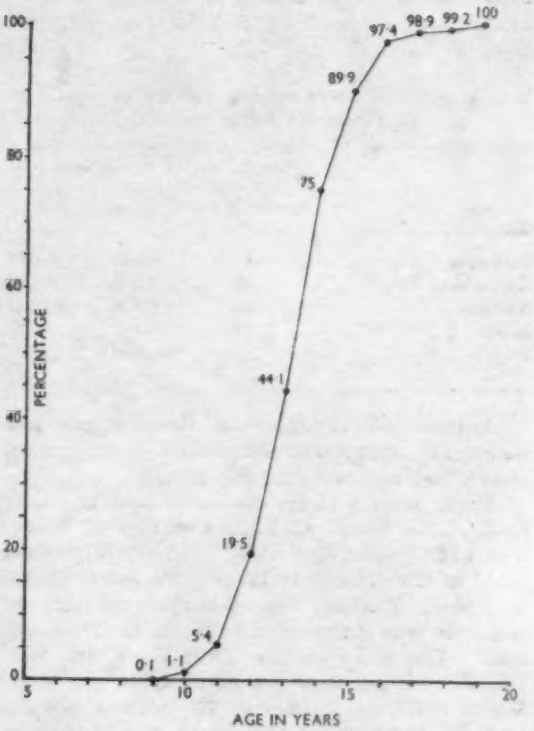

FIG. 2—SHOWING THE PERCENTAGE OF GIRLS ATTAINING THE MENARCHE BY GIVEN YEARS OF AGE

Since the total frequency exceeded 1,000, it was considered wise to apply Sheppard's corrections to the moments of the grouped distribution.

The cumulative percentage of women attaining the menarche by given years of age has been shown in Figs. 1 and 2.

Results

For the discrete distribution
$\mu_1' = 13{\cdot}60$ years, S.D. $= 1{\cdot}4652$
$\mu_2 = 2{\cdot}1468$

Mode = 14 years, range = 9 to 19 years.

Coefficient of variation = 10·33 per cent

For the grouped distribution.
$\mu_1' = 13{\cdot}752$, $\mu_2' = 2{\cdot}394460$, $\mu_3' = 2{\cdot}566380$
$\mu_4' = 17{\cdot}787011$

Uncorrected moments are
$\mu_2 = 2{\cdot}146842$, $\mu_3 = 0{\cdot}761724$ & $\mu_4 = 16{\cdot}052289$

Applying Sheppard's corrections,
$\mu_2 = 2{\cdot}063509$ S.D. $= 1{\cdot}43649$
$\mu_3 = 0{\cdot}761724$ & $\mu_4 = 15{\cdot}049701$.

Thus, for the grouped distribution,
Coefficient of variation = 10·45 per cent
Mode came out as 13·91.

$\beta_1 = 0{\cdot}0660345$ & $\beta_2 = 3{\cdot}53439$.

Consulting Pearson's (β_1, β_2) diagram it was found that the (β_1, β_2) point was in the Type IV region. However, in view of the simplicity and tractability of the normal curve, and to support the findings of Wilson and Sutherland (1950), we attempted to fit a normal curve to the data, the equation being,

$$Y = \frac{1}{\sqrt{2\pi}\,\sigma} e^{-\frac{1}{2\sigma^2}(x-m)^2}$$

where mean $m = 13{\cdot}752$

and S.D. $\sigma = 1{\cdot}43649$

The expected frequencies given by the normal curve are shown in Table 8. The value of X^2 obtained was $X^2 = 37{\cdot}605$, d.f. $= 7$ while $X^2_{\cdot 01} = 18{\cdot}475$ and $X^2_{\cdot 05} = 14{\cdot}067$

Thus the divergence between the observed and the expected frequencies is significantly large and hence normal law fails to provide a satisfactory 'fit' to the body of data. Denoting by m_1, m_2 & m_3 the respective means of the population, assumed normal, from which the data of ours, of Rakshit and of Sen arise, we now test the null hypotheses H_{01} ($m_1 = m_2$) against the class of alternatives H_1 ($m_1 > m_2$) and H_{02} ($m_1 = m_3$) against alternatives H_2 ($m_1 > m_3$). Since the samples are sufficiently large, we apply the large sample statistics.

$$\tau_1 = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad \text{and} \quad \tau_2 = \frac{\bar{x}_1 - \bar{x}_3}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_3^2}{n_3}}}$$

distributed as standard normal deviates, where $\bar{x}_1$, $\bar{x}_2$, $\bar{x}_3$ are the respective means, s_1, s_2, s_3 the S.D.'s and n_1, n_2, n_3 the sample-sizes. Values of τ_1 and τ_2 were found to be $\tau_1 = 12{\cdot}47$ and $\tau_2 = 12{\cdot}20$ while the one-sided significance points of the normal distribution are

$$\tau_{\cdot 01} = 2{\cdot}58 \text{ and } \tau_{\cdot 05} = 1{\cdot}96$$

indicating that the observed values are highly significant, *i.e.*, the mean age obtained by us may be regarded as higher than that obtained by Rakshit (*loc. cit.*) and Sen (*loc. cit.*).

Discussions

One will be simply dumb-founded at the capricious behaviour of the menarcheal age, though workers from time to time have attempted to ascribe such variations to assignable sources. One would look askance at the exact correspondence of the average age of puberty in Bengalee girls obtained by us with that obtained by Robertson (1845) 115 years back, inspite of Sarkar's (1951) observation that "there are, however, indications that in this country as well, the menarcheal age is going down".

Another aspect of study arises from the review of world literature on menarcheal age. Opinions are divided regarding the factors influencing the age at menarche. But the influence of heredity, race, genetics, diet, body-built, environment, and constitution on the menarcheal age has not been disputed. The majority of authors agree that climate influences the age of puberty, and Norwegian statistics go to support it. But some workers attach only secondary importance to climate, and a few others deny its influence at all. There is no unanimity in the verdict as to the effect of higher socio-economic status on menarcheal age. The age of puberty, said to be responsive to changes in climate, race, community, diet and numerous other factors, failed to show remarkable variations between the factor-groups. But the wide range of ages in any particular investigation brings to focus the conspicuous prominence of individual variations. In our study the variations has been between 9 to 19 years.

A world-wide decrease in the age at menarche has been apparent during the last generation, pro-

bably because of the higher standard of hygiene and diet which induce better growth and development. Statistics drawn from questioning middle-aged women compared with those from questioning young women, show a difference of at least one year in the age at menarche (Mills, 1937). For obscure reasons, daughters are menstruating earlier than their mothers for the past several generations (McArthur, 1957). In Sweden, during the last 50 years the average age at menarche is going down at the average rate of 10 days a year. In the U.S.A. whites, there is an acceleration in menarche amounting to 4 months between 1930 to 1939. The Negroes of U.S.A. also show the same trend. During the 25 years preceding World War II, the sexual maturity of the girls has speeded up by 1 year and 2½ months. The mean menarcheal age of girls in Germany has fallen from 16·3 years in 1860 to 14·6 years in 1940—there being an abrupt decline in the decade 1920-30.

The psychological significance of a modal age can be traced in the present series. It came out as 14 years—a little higher than the average,—possibly indicating an apprehended dishonour in stating the menarcheal age below 14 years among the coy girls of Bengal.

The inception of menstruation provides an important landmark in puberal development, and its timely appearance undoubtedly represents a constitutional trait of considerable significance. The age at menarche is a fairly accurate barometer of the mental and physical get up of the puberal girls. Its timely appearance gives the assurance that puberty is progressing normally. In temperate climate, like ours, the non-appearance of the menarche at the age of 16 portends future menstrual irregularities and its absence at 18 connotes the presence of a major endocrine or metabolic disturbance. Menarche is such a definite event that its appearance is now considered a more specific standard for comparison of age-groups in young girls than chronological age. An extensive number of reports on this subject have appeared, including some under the sponsorship of the Society for Research in Child Development. In the main, they confirm the original findings of Stratz (1909), Boas (1932 and 1933), Stone and Barker (1937) and others.

Menarche is the "age of maximal rate of growth" (Boas, *loc. cit*), or the "Zyeite Strecking" (Stratz, *loc. cit.*). The earlier the onset of puberty, the more rapid are the growth processes completed. As a result, girls who begin to mens-

TABLE 9—SHOWING THE MEAN AND S.D. OF AGE OF MENARCHE OF INDIAN WOMEN BY DIFFRENT INVESTIGATORS

Population or community	Investigator	Number	Mean age at menarche	Range	S.D.
Bombay	Robertson (1846)	230	13·6		
Calcutta (Hindu Bengalee) ...	Gupta 1848)	37	12·38		0·67
Hindu	Curjel (1920)	268	13·62		1·80
Muslim	do.	140	13·64		1·89
Christian	do.	81	13·69		1·53
Pooled	do.	489	13·64		
College girls	do.	56	13·88		1·57
Bengalee	Age of Consent Committee (1929)	few thousands	12·00	11-13	
Brahmans (Bengal) ...	Sen (1950)	153	12·80	9-16	1·28
Vaidyas Do. ...	do.	275	12·70	9-16	1·38
Kayasthas Do. ...	do.	219	12·87	10-16	1·16
Bagdis Do. ...	do.	60	13·25	11-16	1·67
Nayars of Travancore ...	Baruah (1953)	74	14·29	10-16	1·19
Central India (Munda, Oraon, Santhal)	Wilson & Sutherland (1950)	411	14·65		11·15
Brahmans (Assam) ...	Rakshit (Guha) (1954)	60	12·46		1·99
Kayasthas Do. ...	do.	32	12·45		1·16
Muslim Do. ...	do.	29	13·35		0·79
Kalita Do. ...	do.	17	12·12		1·07
Pooled Do. ...	do.	138	13·39		1·01
Bombay	Baxi (1957)	372	12·78		1·60
Andhra	Seetha (1957)	100	13·53		
Bengal (present series) ...	Banerjee & Mukherjee (1961)	1047	13·60	9-19	1·47

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truate while very young tend to be short, (lateral or pyknic type), while those with a late menarche tend to be tall (longitudinal or leptosome type). The sterile period shortens as the menarche is delayed.

A late onset of puberty is characteristic of hypoplasia genitalis and of ill development of the uterus. An early onset of puberty suggests undue activity of the ovaries and later in life such patients frequently suffer from excessive menstrual bleeding.

Either the breasts or pubic hairs may develop alone precociously from infancy onwards, and be followed by a normal puberty at the usual age. Other more complete signs of puberty before the age of 8 in girls may be regarded as precocious. Puberty should not be considered abnormally delayed till the eighteenth year is passed without menarche as it may occur upto the age of 20 or rarely even upto 25 years in some instances. It is difficult to determine if this is merely a physiological delay, when other signs of pubescence are evident in the breasts or pubic hair with no other abnormalities. If the delay is not considered physiological, the case would be more fully investigated for primary amenorrhoea. Again, there is the possibility of abnormally early appearance of puberty if there is history of early practice of sexual intercourse, as has been observed in many prostitutes.

Unfortunately, we do not posses sufficient and authentic data on which to build our opinion about the trend of menarcheal age in Indian girls. In Bengal, particularly, the average age of menarche obtained by different investigators shows no persistent trend and it is difficult to corroborate by facts and figures the findings of Sarkar (*loc. cit.*).

The lack of any conclusive evidence to show a downward trend (Sarkar, *loc. cit.*) in menarcheal age of Bengalee or of Indian girls is clearly seen in Table 9.

The figures from Frommolt (1936) will be more elucidative (Table 10).

TABLE 10—SHOWING RANGE OF GROUP AVERAGE OF AGE AT MENARCHE

Country or people	No. of groups assembled	Total No. of cases	Range of group averages of age at menarche (years)
India ...	4	1,560	12·5-13·6

In our series the mean menarcheal age was found to be 13·6. It is the highest ever recorded by Indian workers, as mentioned by Frommolt (*loc. cit.*).

SUMMARY AND CONCLUSION

1. A study based on the menarcheal ages of 1,047 Bengalee Hindu girls belonging to various social classes is presented for its physiological and anthropological importance.

2. A note on the physiology, the mechanism and the rituals related to menarche is also added.

3. A review of similar work by foreign authors on the factors influencing menarcheal age, as well as its variations is presented.

4. A critical review of work by Indian auhors on the age at menarche has been given, and results of the critical analysis and calculation on the basis of statistics are presented.

5. In our series of 1,047 cases the mean menarcheal age has been found to be 13·6 years, the modal age 14 years, the range from 9 to 19 years and the S.D. 1·47 years.

6. The importance of the menarcheal age has been discussed from biological and medical aspects. We have tried to study the trend of menarcheal age in relation to the observations of previous authors claiming a downward trend.

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REFERENCES

BARUA, P.—Quoted by Sarkar (1951).

BAXI, P. V.—*J. Obst. & Gynaec. India*, **8** : 26, 1957.

BIRCH—Davidson's Hygiene and Diseases of Warm Climates 1892, p. 12.

BOAS, F.—*Human Biology*, **4** : 307, 1932.

Idem—Ibid, **5** : 29, 1933.

CHASCHINSKY, P. C. AND JERSCHOW, S. I.—Quoted by Delee and Greenhill (1947).

CURJEL, D. F.—*Indian J. M. Res.*, **8** : 366, 1920.

CURTIS, A. H.—A Text Book of Gynaecology, 5th Edition, 1947. Saunders, Philadelphia, p. 92.

DAS, K. N.—Quoted by Birch (1892).

DELEE, J. B. AND GREENHILL, J. P.—Principles and Practice of Obstetrics, 9th Edition, 1947. Saunders, Philadelphia and London, p. 87.

DEUTSCH, H.—Meigs and Sturgis's, Progress in Gynaecology, 1952. Grune & Stratton, New York.

EHRENFEST, H.—*Am. J. Obst & Gynaec.*, **34** : 530, 1937.
ENGLE, E. T. AND SHELESNYAK, M. C.—*Human Biology*, **6** : 431, 1934.
FLUHMANN, C. F.—The Management of Menstrual Disorders. 1956. Saunders, Philadelphia.
FROMMOLT, G.—Rassenfragen In der Geburtshiefe Und Gynakologie, 1936, J. A. Barth, Leipzig.
GESSEL, A., ILG, F. L. AND AMES, L. B.—Youth : The Years from Ten to Sixteen, 1956. Harper, London.
GREENHILL, J. P.—The Year Book of Gynaecology & Obstetrics, 1951. The Year Book Publishers, Chicago, p. 493.
GUPTA, M.—On Menstruation Among Hindu Females in Webb's Pathologica Indica, 2nd Edition, 1848, p. 277.
JEFFCOATE, T. N. A.—Principles of Gynaecology, 1957. Butterworth, London, p. 82.
KENNEDY, J. (1933)—*J. Obst. & Gynaec. Brit. Emp.*, **40** : 792, 1933.
Idem—Am. J. Obst. & Gynaec. **31** : 573, 1936.
KISCH, E. H.—The Sexual life of Women in its Physiological, Pathological and Hygienic Aspects, 1910, Rebman Limited, London, p. 37.
MANUEL, M.—*Gynaec. India*, **8** : 83, 1957.
MAZER, C. AND ISRAEL, S. L.—Diagnosis and Treatment of Menstrual Disorders and Sterility, 2nd Edition, 1946. Heinemann, London, p. 64.
MCARTHUR, J. W.—Quoted from Meigs and Sturgis's Progress in Gynaecology, Series 3, 1957. Grune & Stratton, New York.
MILLS, C. A.—*Human Biology*, **9** : 43, 1937.
NOVAK, E.—*Am. J. Obst. & Gynaec.* **47** : 20, 1944.
PELLERS—*Zentralbl. Gynaec.*, **57** : 3897, 1933.
PILLAY, A. P.—Marriage & Divorce in India, proceedings of the 3rd Sexual Reform Congress, London, 1930, Kegan Paul, p. 76.
RAKSHIT, G.—*Man in India*, **40** : 82, 1954.
READ, C. D. AND MCLEOD, D. H.—Gynaecology, 5th Edition, 1955. Churchill, London, p. 64, 119.
ROBERTSON, J.—*Edinburgh M. & Surg. J.*, **64** : 156, 1845.
Idem—Ibid, **69** : 69 1848.
SARKAR, S. S.—The Place of human Biology in Anthropology and its utility in the service of the nation. Address, Section of Anthropology, Indian Science Congress Bangalore, 1951.
SEETHA, M. V.—*J. Obst. & Gynaec. India*, **8** : 79, 1957.
SELYE, H.—Text-Book of Endocrinology, 2nd Edition, 1950. Acta-Endocrinologica, Inc. Montreal.
SEN, T.—*Man in India*, **23** : 31, 1953.
SHAW, W.—Text Book of Gynaecology, 7th Edition, 1959. Churchill, London, p. 89, 95.
SMOUT, C. F. V. AND JACOBY, F.—Gynaecological and Obstetrical Anatomy and Functional Histology, 3rd Edition, 1953. Edward Arnold & Co., London, p. 140.
STONE, C. P. AND BARKER, R. G.—*Human Biology*, **9** : 1, 1937.
STRATZ, D. H.—Der Korper Bes Kindes Und Seine Pflege, 3rd Edition, 1909. Ferdinand & Enke, Stuttgart.
SUSHRUTA-SAMHITA (English verson)—edited by Kaviraj Kunjalal Bhishagratna, (1907), Vol. I, Chap. 14, p. 107.
WILSON, D. C. AND SUTHERLAND, I.—*Brit. M. J.*, **2** : 862, 1950.

A STUDY OF 280 CONSECUTIVE CASES OF TETANUS

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Hooghly Sadar A.G. Hospital is generally meant for infectious diseases. Hooghly *sadar* is surrounded by many industrial organisations and with rapid growth of industries in this area, the incidence of tetanus and other infectious diseases has increased remarkably.

As the antitoxin is costly, the treatment of tetanus is very expensive and involves a great burden on the national exchequer. The result of such an expensive regime is not always satisfactory, and the mortality rate is about 50 per cent. This led the author to try and evaluate a new line of treatment with smaller doses of the specific serum with more emphasis on the use of sedatives and antibiotics.

METHODS AND MATERIALS

280 consecutive cases of tetanus were treated in this hospital during the period October 1957 to September 1960 (3 years). The diagnosis was clinical, based on the presence of trismus, neck rigidity, rigidity of the extremities, spasms on slightest stimuli and presence of consciousness.

The cases were divided into two groups :

Group A—Tetanus neonatorum		54 cases
Group B—Tetanus in children .. 106		226 cases
Tetanus in adults .. 120		
Total ..		280 cases

MANAGEMENT

SPECIFIC SERO-THERAPY :

(A) Tetanus neonatorum—10,000 units of A.T.S. was injected intramuscularly immediately, followed by a second dose of the same quantity 12 hours after but not later than 24 hours of admission. Total dose given was 20,000 units.

(B) In case of children and adults—50,000 units was injected intramuscularly, followed by a second dose of the same quantity 12 hours after, but not later than 24 hours of admission. Total dose given was 100,000 units.

SEDATION :

1. Chloral hydras—gr. 15, Potassium bromide —gr. 15, Syrup aurantii—m. 30, Aqua chloroform —ad fl. oz. 1. One such administered orally, three times daily.

2. Paraldehyde, 4 to 8 ml., was used intramuscularly according to the severity of spasm and build of the individual. In some patients where spasms were still persisting, phenobarbitone gr. 1½ orally or gr. 1½ intramuscularly once or twice daily was given in between the other two drugs. When phenobarbitone failed to produce satisfactory result along with chloral bydras and paraldehyde, chlorpromazine hydrochlor (largactil) 50 mg. was given intramuscularly once or twice daily, in place of phenobarbitone.

In some patients constipation and distended bladder excited spasms. Relief of constipation by low glycerine enema and glycerine suppository (in neonatal cases) and evacuation of bladder by catheterisation relieved the patient of spasms.

USE OF ANTIBIOTICS :

Crystalline penicillin-G sodium 5 lacs or procaine penicillin-G 4 lacs was injected intramuscularly once or twice daily for 8 to 10 days according to the nature of the *Cl. tetani* infection and the severity of the associated wounds, if any.

NURSING AND MAINTENANCE OF NUTRITION :

Cow's milk, liquid foods and tap water were given orally in between spasms. Too much of fruit juice and glucose drink as accessory foods were not favoured as these had been found to produce tympanitis. Milk was however enriched with vitamin B-complex elixir or multivitamin drops.

Due to lack of facilities the patients could not be kept in well equipped tetanus wards, but strict regime was followed, so that external stimuli of any type might not disturb the patients.

ANALYSIS OF CASES AND OBSERVATION

Total number of admission of all patients during this period of three years was 1,520 of which admission of tetanus cases alone was 280 (18·4 per cent). Records of the last 8 years (from 1953 to September, 1960) show an increase, year to year, of tetanus cases (Table 1). The records also show that there has been no seasonal prevalence.

Out of 54 infants suffering from neonatal tetanus (Group A), 39 died. The causes of death were hyperpyrexia (60 per cent) and exhaustion leading to asphyxia (40 per cent). Septic complications of the lung were not commonly encountered. Correlation of mortality rate with incubation period and time elapsed between institution of serum therapy after onset of symptoms is shown in Table 2.

TABLE 1—SHOWING INCIDENCE OF TETANUS CASES DURING THE LAST 8 YEARS (1953—SEPTEMBER 1960)

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1953	—	1	1	4	1	1	2	2	3	2	2	7	26
1954	3	4	—	1	—	1	—	2	2	5	2	2	22
1955	1	3	5	3	3	1	2	1	1	1	1	1	23
1956	2	4	6	5	3	3	3	6	4	5	6	6	53
1957	3	2	4	3	4	5	7	7	7	4	6	4	56
1958	7	4	4	5	3	1	8	13	8	10	4	7	74
1959	7	7	5	9	6	10	10	7	8	11	8	10	98
1960 (upto Sept.)	15	9	6	12	6	6	15	15	10	—	—	—	94
Total ...	38	34	31	42	26	28	47	53	43	38	29	37	446

TABLE 2—SHOWING CORRELATION OF MORTALITY RATE WITH INCUBATION PERIOD AND TIME ELAPSED BETWEEN INSTITUTION OF SERUM THERAPY AFTER ONSET OF SYMPTOMS IN NEONATAL TETANUS

Incubation period (days)	Institution of serum therapy		With active wounds	Without active wounds	No. cured among those treated		No. died among those treated		Mortality rate among those treated	
	Within 24 hrs.	After 24 hrs.			Within 24 hrs.	After 24 hrs.	Within 24 hrs.	After 24 hrs.	Within 24 hrs. %	After 24 hrs. %
4—10 ...	24	11	33	2	1	—	23	11	95·80	100
10—15 ...	5	7	12	—	4	4	1	3	20	42·85
15 and above	5	2	6	1	4	2	1	—	20	—
Total No. treated	54		54		15		39		72·2	

'Active wound' indicates wound with signs of inflammation and exudation irrespective of size or depth.

TABLE 3—SHOWING OCCUPATION OF PATIENTS IN GROUP B

Occupation	No. of patients	Occupation	No. of patients
Children with no occupation ...	106	School students ...	10
Industrial workers (male and female)	50	Rickshaw pullers	6
Cultivators ...	20	Primary school teachers ...	4
Housewives ...	15	Businessmen ...	4
Domestic servants	10	College student (girl) ...	1
	Total ... 226		

TABLE 4—SHOWING NATURE OF WOUNDS FOLLOWED BY TETANUS

Nature of wounds	No. of patients	Nature of wounds	No. of patients
Minor injury ...	84	Following menstruation and use of unhygienic pads ...	7
Otitis media ...	70		
Injury could not be detected ...	12		
Scalp injury ...	11	Following wounds of smallpox vaccination ...	3
Normal delivery ...	10		
Abortion ...	5	Operative wounds	3
Thorn prick ...	9	Compound fracture	2
Burn (all extensive) ...	9	Axillary abscess ...	1
	Total ... 226		

Table 3 shows the distribution of patients of Group B according to their occupation. Table 4 gives an analysis of these patients with respect to the nature of the wound.

Of 226 cases in Group B, 70 (including 63 children) were suffering from otitis media and no other wounds could be detected in them. Hence it was considered as the site of infection. Incubation period could not be ascertained in 57 cases suffering from chronic otorrhoea for more than six months. The mortality rate in this group of 70 cases was 15·7 per cent. The mortality rate in 'burn' cases was 100 per cent, and the corresponding rate in puerperal cases was 46·6 per cent (Table 5).

TABLE 5—SHOWING CORRELATION OF MORTALITY RATE WITH INCUBATION PERIOD AND TIME ELAPSED BETWEEN INSTITUTION OF SERUM THERAPY AFTER ONSET OF SYMPTOMS IN (A) OTITIS MEDIA, (B) BURNS AND (C) PUERPERAL CASES

Incubation period (days)	Institution of serum therapy		With active wounds	Without active wounds	No. cured among those treated		No. died among those treated		Mortality rate among those treated	
	Within 24 hrs.	After 24 hrs.			Within 24 hrs.	After 24 hrs.	Within 24 hrs.	After 24 hrs.	Within 24 hrs. %	After 24 hrs. %
A. OTITIS MEDIA CASES										
10—15 ...	9	2	7	4	8	1	1	1	11·1	50
15 and above	—	2	—	2	—	1	—	1	—	50
Could not be ascertained	15	42	1	56	11	38	4	4	26·6	9·5
Total No. treated	70		70		59		11		15·7	
B. BURN CASES										
4—10 ...	3	3	6	—	—	—	3	3	100	100
10—15 ...	2	1	3	—	—	—	2	1	100	100
Total No. treated	9		9		—		9		100	
C. PUERPERAL CASES										
4—10 ...	8	3	11	—	2	2	6	1	75	33·3
10—15 ...	1	2	3	—	1	2	—	—	—	—
15 and above	—	1	1	—	—	1	—	—	—	—
Total No. treated	15		15		8		7		46·6	

'Active wound' indicates wound with signs of inflammation and exudation irrespective of size and depth.

TABLE 6—SHOWING CORRELATION OF MORTALITY RATE WITH DURATION OF ILLNESS

Duration of illness (days)	Cured	Died	Total	Mortality rate (per cent)
1—5 ...	1	60	61	98·4
5—10 ...	17	2	19	10·5
10 and above ...	146	—	146	—
Total ...	164	62	226	27·4

Cases of tetanus following wounds of the scalp were found to be no more fatal than those with wounds at other parts of the body. Of eleven patients having scalp injury, only two died (mortality rate 18·1 per cent).

Only 62 patients out of 226 (Group B) died (Table 6). Of them 21 (30 per cent) died of hyperpyrexia and 41 (70 per cent) died of exhaustion and asphyxia. None of the patients died of septic complications of the lung.

The overall mortality rate and its correlation with incubation period and the time elapsing between institution of serum therapy after onset of symptoms in Group B is shown in Table 7.

DISCUSSION

Workers have recommended widely varying quantities of antitoxin—from as high as 34,60,000 units to as low as 20,000 units (Tice-Sloan-Hendrick, 1955) for treatment of tetanus. Rose (1959) suggested 2 lacs units by intravenous route immediately and 10,000 to 20,000 units by infiltration in and around the wounds. British Pharmaceutical Codex (1954) suggested administration of a large dose initially by intravenous route as soon as infection was suspected, and subsequently 25,000 units by intravenous or intramuscular route till all the reflex spasms had ceased. Similarly a large dose was used in this Hospital, but the result of the treatment obtained was not satisfactory, and the fatality rate was very high. Different workers have reported this rate to vary from 41 to 50 per cent (Rose, *loc. cit.* ; Wilson and Miles, 1955 ; Felsen, Musser and Wohl, 1951 ; Whitla, 1957). Neonatal tetanus was usually fatal (Wilson and Miles, *loc. cit.*).

But the result of the author's regime of treatment in 280 consecutive cases with small dose of antiserum supplemented with other symptomatic treatment has been found to be satisfactory. Mortality rate in children and adult cases was 27·4 per cent and in neonatal cases 72·2 per cent.

The idea of using antitoxin is to neutralise the circulating toxin only. For this purpose very large dose of the antitoxin may not be essential, as shown by the result in this series. If this view can be firmly established the use of large doses of antitoxin would seem wasteful. In fact, Taylor and Spaeth (quoted by Reimann, 1948) and Sundusky (1960) pleaded in the same line.

TABLE 7—SHOWING CORRELATION OF MORTALITY RATE WITH INCUBATION PERIOD AND TIME ELAPSED BETWEEN INSTITUTION OF SERUM THERAPY AFTER ONSET OF SYMPTOMS IN CASES OF CHILDREN AND ADULTS

Incubation period (days)	Institution of serum therapy		With active wounds	Without active wounds	No. cured among those treated		No. died among those treated		Mortality rate among those treated	
	Within 24 hrs.	After 24 hrs.			Within 24 hrs.	After 24 hrs.	Within 24 hrs.	After 24 hrs.	Within 24 hrs. %	After 24 hrs. %
4—10 ...	51	22	47	26	25	11	25	11	49	50
10—15 ...	23	34	20	37	16	29	7	5	30·4	14·7
15 and above	8	18	12	14	8	16	—	2	—	11·1
Could not be ascertained	18	52	2	68	13	46	6	5	33·3	9·6
Total No. treated	226		226		164		62		27·4	

'Active wound' indicates wound with signs of inflammation and exudation irrespective of size and depth.

In the present study serum was given by intramuscular route as a routine following the caution recommended by Reimann (1948), Jones and Porritt (1948) and Anderson (1955).

Intradermal test of sensitivity was not tried in any of the cases and none of them had any reaction. It might be mentioned here that this preliminary skin sensitivity test was considered to be unsatisfactory by some writers (Hanna and Hanna, 1957 ; Anderson, *loc. cit.*).

Paraldehyde, chloral hydras and phenobarbitone were chosen as basic regime for sedation. Large or very large doses of sedatives were required in proportion to the degree of spasm. This was determined on the merit of individual cases. 8 to 10 ml. of paraldehyde was used intramuscularly with rapid and satisfactory result. It was well tolerated by infants and children. Besides being cheap, paraldehyde has an added advantage of being easily excreted through the system. Paraldehyde by rectal route was abandoned because of its slow and uncertain absorption. Further prolonged intubation in the rectum causes irritation resulting in spasm. Sedation was the key-stone in the treatment of tetanus. Felsen, Musser and Wohl (*loc. cit.*) also held similar views.

Tubo-curarine, pentothal (2·5 per cent solution) by intravenous drip, avertin solution by rectal drip, and curare, curare-like compounds, myanesin and tolserol compound have given satisfactory result. All of them are not without risk, and so they were not tried in our series.

The problem of feeding was obvious where trismus was marked and spasm was at rapid intervals. Instructions were given to the nurses and attendants not to disturb a sleeping patient for purposes of feeding. Milk and tap water supplemented with elixir vitamin B-complex or multivitamin drops in measured dose were considered sufficient to maintain nutrition of the patient during the short period of this illness, rather than disturbing the patient for ensuring better nutrition. Felsen, Musser and Wohl (*loc. cit.*) also held the same view.

Summary

280 consecutive cases of tetanus were treated during the period from October 1957 to September 1960 at Hooghly Sadar A. G. Hospital. The incidence of tetanus constituted 18·4 per cent of all admissions in the hospital during the period. The rate of admission of tetanus was found to be gradually increasing.

In the modified regime recommended for cases of tetanus in this hospital, more emphasis was given on the use of sedatives and antibiotics with favourable results. A comparatively smaller dose of specific antitoxin was used by the intramuscular route, and the results were found to be encouraging. General mortality rate in children and adults group was 27·4 per cent and in infants 72·2 per cent.

Rate of mortality was found to be 15·7 per cent in otitis media cases, 100 per cent in burn cases, 46·6 per cent in puerperal cases and only 18·1 per cent in scalp injury cases.

This study appears to show that intravenous administration of large doses of serum is probably not necessary for the treatment of tetanus.

Acknowledgment

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References

Anderson, T., Dunlop, D. M., Davidson, L. S. P. and McNee, J.—Text Book of Medical Treatment, 6th Ed., 1954, Livingstone, Edinburgh and London, p. 63.

British Pharmaceutical Codex, 1954, Pharmaceutical Press, London, p. 880.

Felsen, Musser and Wohl's Internal *Medicine*, 1951, Lea and Febiger, Philadelphia, p. 197.

Hanna, W., Hanna, P. R.—*J. Christian M. A. India*, **2** : 5, 1957.

Jones, R. M. and Porritt, A. E.—Essentials of Modern Surgery, 3rd Ed., 1948, Livingstone, Edinburgh, p. 19.

Reimann, H. A.—Treatment in General Practice, Vol. 1, 4th Ed., 1948, Davis, Philadelphia, p. 160.

Rose, H. M.—Cecil and Loeb's Textbook of Medicine, 1959, Saunders, Philalelphia, p. 197.

Sundusky, W. R.—Current Therapy, 1960, Saunders, Philadelphia and London, p. 62.

Tice-Sloan-Hendrick's Practice of Medicine, Vol. V, 1955, Prior, Hagerstown, Md., p. 33.

Wilson, A. S. and Miles, A. A.—Topley's Principle of Bacteriology and Immunity, Vol. 2, 1955, 4th Ed., Arnold, London, p. 1955.

Whitla's Dictionary of Medical Treatment, 1957, Bailliere, Tindall and Cox, London, p. 606.

USE OF DIFFERENT FLUIDS FOR ENUMERATION OF ERYTHROCYTES UNDER TROPICAL CONDITIONS*

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Fluids of varying compositions have been recommended by various authors (Das Gupta and Napier, 1945 ; Gradwohl, 1956 ; Dacie, 1958) for use as diluting fluids for the purpose of enumeration of erythrocytes in blood. Some of these fluids differ so much in composition that the use of certain chemicals in the given proportions may be questioned. In view of the importance of correct haemocytometry in the diagnosis and prognosis of diseases associated with altered red cell counts, a fluid ideal in composition and suited for a tropical climate is of immense value in the clinical investigations.

Materials and Methods

The enumeration of erythrocytes was done with a haemocytometer with improved Neubauer ruling counting chamber. Samples of blood from human volunteers (most of whom were workers in this Department) were drawn by venepuncture and collected in sampling vials containing three different anticoagulants, viz., oxalate solution containing potassium oxalate and ammonium oxalate ; 3·8 per cent sodium citrate solution ; and heparin. Composition of fluids used are given in Table 1.

Microscopic observations — Along with the enumerations of erythrocytes in the squares of (Thoma Zeiss) improved Neubauer ruling special care was taken to observe clarity, clumping, rouleaux formation, shape and size of erythrocytes.

* Based on a talk given by the second author at a meeting of the Seminar, pathology department, Assam Medical College, Dibrugarh.

Table 1—Showing Names and Composition of Fluids used for Enumeration of Erythrocytes

Serial No.	Names	Composition	
I	Hayem's fluid	Mercuric chloride ..	0·25 g.
		Sodium sulphate (crystalline) ..	2·5 g.
		Sodium chloride ..	0·5 g.
		Distilled water ..	100 ml.
II	Hayem's (modified) fluid	Same as above with addition of 0·01% gelatine	
III	Grower's fluid	Sodium sulphate (crystalline) ..	6·25 g.
		Glacial acetic acid	16·65 ml.
		Distilled water ..	100 ml.
IV	Gower's (modified) fluid	Sodium sulphate (anhydrous) ..	3·31 g.
		Glacial acetic acid	5 ml.
		Distilled water ..	100 ml.
V	—do—	Sodium sulphate (anhydrous) ..	3·31 g.
		Glacial acetic acid	10 ml.
		Distilled water ..	100 ml.
VI	—do—	Sodium sulphate (anhydrous) ..	3·31 g.
		Glacial acetic acid	20 ml.
		Distilled water ..	100 ml.
VII	—do—	Sodium sulphate (anhydrous) ..	3·31 g.
		Distilled water ..	100 ml.
VIII	Dacie's fluid	Trisodium citrate ..	3 g.
		Formalin 1% ..	100 ml.
IX	Bell's fluid	Sodium citrate ..	3·8 g.
		Chloroform ..	¼ ml.
		Distilled water ..	100 ml.

Results

Altogether nine solutions were used for each sample of blood examined with three different anticoagulants. Results of R.B.C. count in samples of blood obtained from nine persons are presented in Table 2, which shows the mean results with their standard error (S.E.). Results of other microscopic observations are shown in

Table 2—Showing Mean Total Counts* of Erythrocytes using Different Diluting Fluids

Blood samples	Sol. I	Sol. II	Sol. III	Sol. IV	Sol. V	Sol. VI	Sol. VII	Sol. VIII	Sol. IX
Oxalated	4·64	4·70	4·42	4·33	4·09	3·84	4·13	4·82	3·92
S.E.	±0·04	±0·13	±0·01	±0·08	±0·10	±0·33	±0·13	±0·10	±0·15
Citrated	4·13	4·12	3·96	3·94	3·79	3·50	3·43	4·28	3·72
S.E.	±0·05	±0·30	±0·99	±0·07	±0·14	±0·14	±0·79	±0·79	±0·30
Heparinised	4·51	4·56	4·18	4·18	4·00	3·76	3·76	4·40	4·02
S.E.	±0·22	±0·23	±0·44	±0·12	±0·15	±0·12	±0·63	±0·36	±0·21

* Erythrocyte count in millions per c.mm. (Mean results of blood from 9 individuals).

Table 3. Average figures of three results using three anticoagulants were taken into account in each experiment.

TABLE 3—SHOWING MICROSCOPIC OBSERVATIONS ON ERYTHROCYTES USING DIFFERENT FLUIDS

Serial No. of fluid	Discrete	Alteration in shape & size	Rouleaux formation	Clumping	Presence of W.B.C.
I	+	–	+	+	+
				† –	
				* –	
II	+	–	–	–	+
III	+	–	–	+	–
				† –	
				* –	
IV	–	–	+	++	+
V	–	–	–	++	+
VI	–	+	–	++	–
VII	–	+	+	++	+
VIII	+	–	–	–	+
IX	+	–	–	–	+

† With citrated blood; * With heparinised blood.
+ Indicates presence of the phenomenon; – Indicates absence of the phenomenon.

DISCUSSION

This work was considered necessary while observing some aspect of diluting fluids used for erythrocyte count in the laboratory as well as in the practical classes for the first M.B.B.S. students. Selection of an ideal fluid was aimed at. It will be seen from Table 2 that of the nine fluids used solution No. VIII gives the best result irrespective of the use of anticoagulants. Solutions No. II and I come next in the order of preference. The criteria of this selection are:

1. Maximum total number of erythrocytes found in the field of counting.
2. Size, shape of erythrocytes, absence of rouleaux formation and clumping.

Various authors have advocated the use of different fluids but each fluid was found to have some drawback. Toison's fluid (Lamb, 1930) may be used for either a red or white cell count, because it has the advantage of staining the white cells only, and leaves the unstained red cells completely visible. It has the drawback that the dye precipitates after some time.

It is reported that Hayem's fluid, though otherwise ideal, tends to cause a deposit in the pipette. Modification of this fluid has been suggested by adding 0·01 g. gelatine to Hayem's fluid (Gradwohl, 1956) to prevent agglutination and clumping. Counting with this fluid is advantageous in Hodgkin's disease and multiple myeloma (Gradwohl, 1956). It has also been claimed by the same author that Gower's solution prevents rouleaux formation of the erythrocytes. In the matter of selection of an ideal fluid, the old statement, "The best dilution fluids are those that preserve the cells well without agglutination. The refractive index should be low. The viscosity should permit a medium rate of sedimentation" (Lamb, 1930), probably still holds good. Dacie's fluid seems to fulfil all these conditions, apart from its merits obtained in this work. This fluid being simple in its composition may be used for all practical purposes.

SUMMARY

Nine different solutions were used for the enumeration of erythrocytes with the same sample of blood using ordinary laboratory technique with haemocytometer.

Microscopic findings were noted using different fluids and compared.

The fluid containing 3 g. trisodium citrate in 1 per cent formalin was adjusted to be suitable for enumeration of erythrocytes in laboratories.

REFERENCES

DAS GUPTA, C. R. AND NAPIER, L. E.—Haematological Technique, 3rd Ed., 1945, U. N. Dhar & Sons Ltd., Calcutta.

GRADWOHL, R. B. H.—Clinical Laboratory Methods and Diagnosis, Vol. I, 5th Ed., 1956, Mosby, St. Louis.

LAMB, F. W.—An Introduction to Human Experimental Physiology, 1930, Longmans, London.

BELL, G. H.—Experimental Physiology, 6th Ed., 1959, John Smith, Glasgow.

DACIE, J. V.—Practical Haematology, Reprint, 2nd Ed., 1958, Churchill, London.

POSTHEPATITIS SYNDROME*

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Caravati (1944) reported a characteristic group of symptoms under the heading 'posthepatitis syndrome'. The outstanding subjective symptoms are (1) fatigue, (2) discomfort in the right hypochondrium, (3) digestive disturbances particularly fat intolerance, (4) malnutrition and (5) emotional instability. Benjamin and Hoyt (1945) followed

* Work carried out in the Department of Medicine, K. G. Medical College, Lucknow, as research scholar in 1956-1958.

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1. Dis. nerv. Syst., 1960, 21, (Suppl. 3),20
2. Curr. therap. Res., 1960,2,88

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a similar group of patients who were pale, thin and exhausted. They often experienced extreme weakness, insomnia, nervous irritability, tremor, anxiety and apprehension (fear of recurrence of jaundice). Sherlock and Walshe (1946) observed that biochemical and hepatic histological changes in this group were similar in patients who were symptom-free for 6 months after clinical recovery from acute hepatitis. In the present investigation seven cases of posthepatitis syndrome have been observed in a follow-up study of 50 cases of virus hepatitis.

Materials and Methods

50 cases of virus hepatitis were studied during the epidemic of virus hepatitis in 1956-1958 in Lucknow. These were diagnosed on clinical history, liver function tests and needle biopsy of liver.

The patients were followed up at three weeks and six weeks after discharge and thereafter at monthly intervals for the next six months. Special attention was paid to recurrence of jaundice, the size of the liver and spleen, and presence of urobilin in the urine. Biochemical tests included estimation of total serum bilirubin level, thymol turbidity test and needle biopsy of the liver.

In the clinical history symptoms like fatigue, feeling of weakness, fat intolerance, failure to gain weight and right upper abdominal discomfort were specially recorded. Leading questions were avoided as far as possible.

Results

The clinical features of 7 cases of posthepatitis syndrome are shown in Table 1.

Discussion

Posthepatitis syndrome as a clinical entity has been reported by Caravati (1944), Benjamin and Hoyt (1945), and Sherlock and Walshe (1946). In the present series seven cases of posthepatitis syndrome were observed carefully in a follow-up study of 50 cases of viral hepatitis. The incidence of posthepatitis syndrome in this series is 14 per cent. Age incidence varied between 18 and 28 years. Out of the seven cases two were female and five male. There were five students including one medical student and two student nurses. All of them showed emotional instability. On close observation it was found that due to their labile personality with anxiety, they were prone to react to any stress and strain in a different way. Right hypochondriac discomfort was found in five out of seven cases. The next common complaint was digestive disturbances, e.g., fat intolerance, loss of appetite and diarrhoea. In two cases there were tremor, tachycardia, insomnia and excessive irritability simulating thyrotoxicosis. There was apprehension of jaundice and portal cirrhosis developing in future, specially in the case of the medical student and the two nurses who were aware of the sequelae of hepatitis. Liver was palpable and soft in the midclavicular line in six cases. In one case spleen was also just palpable.

Table 1—Showing Clinical Features of Cases of Posthepatitis Syndrome

Case No.	Name	Age (years) & sex	Presenting features	Liver and spleen	Duration of illness (months)
1	K.S.	20, M	Discomfort in right hypochondrium. Always afraid of recurrence of jaundice and developing portal cirrhosis	Liver—2 fingers; soft	6
3	R.V.	15, M	Intolerance to fat and failure to gain weight. Insomnia and irritability	Liver—just palpable	4
6	M.S.	28, M	Tachycardia, tremor of hands and excessive sweating. Right hypochondriac discomfort	Liver—just palpable	4
10	S.M.	19, M	Failure to gain weight; pale, thin and exhausted; loss of appetite and discomfort in right hypochondrium	Liver—one finger Spleen—just palable	5
12	K.D.	18, F	Discomfort in right hypochondrium, failure to gain weight, insomnia and irritability	Liver—1½ fingers	6
16	C.H.	26, M	Loss of appetite and fat intolerance	Not palpable	2
18	S.W.	20, F	Emotional instability, insomnia, fatigue, tremor of the hands and excessive sweating. Afraid of recurrence of jaundice and developing cirrhosis	Liver—2 fingers; soft	6

A follow-up for six months revealed that the liver regressed in size in all these cases.

Examination of urine and biochemical tests of serum for bilirubin and thymol turbidity which were done after three weeks, six weeks and thereafter at monthly intervals for six months did not reveal much abnormality as compared to the symptom-free group of cases of viral hepatitis. Histology of the liver showed only mild residual cellularity of the portal zone with some fatty change in the liver which also did not differ from those of virus hepatitis who recovered normally without posthepatitis syndrome.

In other words, the functional and structural study of liver in these seven cases of posthepatitis syndrome did not differ from other cases of viral hepatitis who recovered normally. Sherlock and Walshe (1946) also could not find any appreciable change in the liver function in such cases. The palpable liver in such cases may be accounted for by the downward displacement of the liver edge rather than real enlargement. Some patients with practice become very efficient in pushing down the liver edge as reported by Sherlock and Walshe (1946).

This study confirms that posthepatitis syndrome is a benign functional disorder as reported by Caravati (1944) and Sherlock and Walshe (1946). The present study also reveals that this disorder is likely to develop in individuals who are emotionally unstable with a sense of fear dominating their consciousness. This group of cases react to the stress and strain of hepatitis in a different way than the control group who recover normally without any disability after hepatitis. In most of the cases they are afraid of another attack of jaundice or that they may develop portal cirrhosis. This perpetuates the whole chain of events. This is particularly noticed (as the present series) in cases of medical students and nurses who have some knowledge about the disease and its sequelae. Reassurance is the only treatment in such cases. After a thorough clinical and laboratory investigation no organic causes was detected to explain the symptomatology in these cases. The personality pattern and psychological background of the person was studied and dealt accordingly with reassurance. All the cases regained their health within 6 months.

Summary

1. Seven cases of posthepatitis syndrome have been observed in a follow-up study of 50 cases of virus hepatitis for six months.

2. Biochemical tests of urine and serum, and a study of hepatic histology in these seven cases did not differ from cases who recovered from viral hepatitis and were symptom-free.

3. Posthepatitis syndrome is a benign functional disorder found in a particular type of individual with emotional instability and anxiety, who cannot bear the stress and strain of hepatitis normally. Nurses and medical students suffer more than others.

4. A psychological approach with reassurance to the person concerned is indicated in all such cases.

Acknowledgment

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References

Caravati, C. M.—*South. M. J.*, **37** : 251, 1944.

Benjamin, J. E. and Hoyt, R. C.—*J.A.M.A.*, **128** : 319, 1945.

Sherlock, S. P. and Walshe, V. M.—*Lancet*, **2** : 482, 1946.

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Introduction

An abscess is a common condition. Those resulting from injection of tissue-necrotising drugs, improperly sterilised syringe and needle and perforating injuries are preventable.

For a clear understanding, all aspects of an abscess, whether pyogenic or specific will be dealt with to enable busy practitioners to plan out better prophylactic measures and efficient treatment.

Definition

In general, an abscess is a circumscribed formation of pus in any part of the body due to molecular necrosis and liquefaction of living tissues. Depending upon the site of development and nature, abscesses may be called furuncle or minute abscesses in sweat glands and hair follicles ; boil or subcutaneous abscess ; carbuncle or multilocular subcutaneous abscess genetally resulting from a furuncle in diabetic or non-diabetic persons ; impetigo or intra-epithelial abscess ;

subepithelial abscess and whitlow or suppurative infection of fingers and toes.

According to the rate of development and duration abscesses may be called acute, subacute or chronic. When the duration is of about 10 days it is called acute. Abscesses of 10 to 30 days' duration are called subacute which now commonly result from treatment of inflammation by antibiotics and chemotherapeutic drugs, while chronic abscesses with more than one month's duration are commonly due to tubercle bacillus, foreign bodies, lepra bacillus, guineaworm, *T. pallidum*, actinomyces and *E. coli* and staphylococcal infection rendered chronic by antibiotic treatment.

Abscesses may be single or multiple. The latter are due to entry of pus-forming bacteria into eroded venous system from acute or chronic suppurating lesions, e.g., purulent otitis media, boils, puerperal sepsis, chronic osteomyelitis, etc.

Types according to the anatomical structures involved are intracutaneous, subcutaneous, intramuscular (in deltoid, glutei and vasti after injection), psoas (due to disease of the spine), lymph node, osseous (Brodie's, apical, alveolar, Bezold's and other abscesses), neural (in leprosy), venous (in and around the vein, due to thrombophlebitis), visceral (liver, lung, brain, pancreas and perinephric abscesses), and others.

Aetiology

Predisposing factors — Boils and multiple pyaemic abscesses are common in children as their defensive antibody system is not well developed. Stye may be due to bacterial infection following allergic response to cosmetics in female. Hypogammaglobulinaemia and allergy predispose to infecion in certain families. Debilitating diseases predispose to abscess formation. In tropical countries, boils are very common during summer. Trauma resulting in injury and haematoma help abscess formation.

Causative factors—They may be viral, bacterial, parasitic, chemical and others. Climatic or tropical bubo (lymphogranuloma venereum or inguinale) are produced by virus infection. Pyogenic micro-organisms (staphylococci, etc.) produce simple pyogenic abscess, injection abscess and postoperative abscess. Cold abscess and collar-stud abscess are due to tubercle bacilli. Lepra bacillus, Ducrey's bacillus, bacillus typhosus, actinomyces and pasteurella pestis are the causative agents of neural abscess, soft sore, secondary osteomyelitis, actinomycotic abscess and bubo of plague respectively.

Parasites like *E. histolytica*, guineaworm and filaria may produce abscesses of the liver ; leg and foot ; and spermatic cord respectively.

Aseptic absceses may result from injection of organic substances (quinine, emetine, paraldehyde), inorganic chemicals (calcium, iron), heavy metals (arsenic, antimony, mercury, bismuth), oily substances (proctocaine), local anaesthetic drugs (efocaine) and hot substances. Unabsorbable foreign bodies (suture material, nails, screws, plates, broken needles) may also produce aseptic abscess.

Arthus' phenomena following injection of serum and pseudo-abscesses from softening of tumours in lymphatic nodes, breast and parotid gland are other varieties of abscesses.

Surgical Pathology

Pathogenesis—When a living tissue or viscus is invaded by virus, bacteria, parasite or physical and chemical irritants diffuse inflammation results and finally according to the nature of defense mechanism either resolution, granuloma or abscess formation occurs. In uncomplicated abscesses vascular changes are first noticed. Formation of inflammatory exudate and localisation followed by a process of repair after spontaneous bursting or surgical drainage are subsequently observed.

Depending upon the nature of the organisms acute or chronic suppuration results. Micro-organisms may come from one part of the body to another *via* blood vessels or lymphatics or from outside as in traumatic or operative wound. The type, dose, virulence and mode of entry of the micro-organisms influence suppuration. Host immunity and susceptibility, and treatment by chemotherapeutic drugs and antibiotics are other factors in this respect. Staphylococci, Streptococci, Gonococci, *E. coli*, *B. proteus*, *B. anthracis*, *P. pestis*, etc., produce acute abscesses, while *M. tuberculosis*, *M. leprae*, *S. typhi*, etc., are responsible for chronic abscesses.

Macroscopic and microscopic pathology—In the early stage, acute inflammatory changes ending in coagulation necrosis are observed. In the fully developed stage an abscess, from without inward, consists of four zones i.e. zone of hyperaemia and exudation of inflammatory cells ; zone of thrombosis of small blood vessels with round cell infiltration ; zone of small round cells or mononuclears or polymorphs with many bacteria ; and central zone of collection of pus. Healing stage is characterised by the presence of dead or very few attenuated bacteria. The inner layer of granulation tissue consisting of new blood vessels supported by proliferating fibroblasts is surrounded by a zone of fibrosis, and further out is the healthy tissue.

The abscess wall is formed as a result of alarm reaction. It consists of tissue infiltrated with polymorphs, eosinophils, lymphocytes, plasma cells, macrophages, epithelioid cells or giant cells depending upon the cause of abscess formation. Plasma from which fibrin is formed and which contains immunolgical weapons like agglutinins, bacteriolysins and opsonins is also present in the abscess wall. Due to chemotaxis inflammatory exudate move towards micro-organisms. Organisms producing hyaluronidase rapidly spreads in the tissues. Localisation does not occur in the early stages.

The pus is a thick fluid with specific gravity of about 1030. It contains 85 per cent of water, is opaque white or yellow in colour and is alkaline in reaction. The liquid portion consists of a solution of peptones. The solid portion consists of dead polymorphonuclear leucocytes, living leucocytes, bacteria, debris of partially digested tissue, etc. The pus of chronic abscess is curdy in appearance with fatty debris, and occasional cholesterol crystals. A few degenerated cells are present. Generally pyogenic bacteria are absent. The tubercle bacillus may be present in 'cold' abscess. It may also contain proteolytic ferment, histamine like substance, leucataxin, other toxins and hyaluronidase.

Modes of spread—An abscess spreads locally and involves adjacent structures by extending along blood vessels, nerves, muscles and fascia. Distal spread occurs via lymphatics and blood vessels.

Course—It is rapid in acute abscess, unless modified by chemotherapeutic drugs or antibiotics and slow in chronic ones.

Termination—Resolution of very small lesions occur specially after specific therapy. Spontaneous bursting, and healing either by granulation tissue and fibrosis (second intention) or by sinus formation and secondary infection may also be found. Recurrence of healing abscess or chronic abscess with inspissated pus, and granuloma formation, fibrosis, calcification and fatty or hyaline degeneration may also be encountered. Death due to local or distal complications, toxaemia, electrolyte imbalance and devastating chemical changes in the body chemistry is not uncommon.

Surgical Anatomy

Knowledge of anatomy is essential in planning the line and extent of the incision, e.g. the course of blood vessels and nerves specially in the neck, axilla, palm, foot and groin ; various spaces and tendon sheaths in hand and foot ; duct system in breast ; and intervening peritoneal and overlying pleural cavities in relation to liver, etc.

Surgical Physiology

Diabetic acidosis should be controlled as much as possible before a diabetic carbuncle is incised under general anaesthesia, otherwise life of the patient may be endangered.

Clinical Features

Symptoms—Malaise and fever with rigor due to sapraemia, septicaemia or pyaemia ; pain, insomnia and swelling are common symptoms.

Local signs—Rednes and warmth due to hyperaemia , swelling and tenderness are commonly present. Interference with functions, fluctuation, firm brawny texture and oedema of the skin are the other signs Oedema is of great diagnostic value in deep-seated suppuration.

Investigations

Leucocytosis suggests infection ; polymorphonuclears predominate in infection by pyogenic organisms, e.g. staphylococcal infection, while lymphocytes are increased in tuberculous infection.

Smear and cultural examination of pus and sensitivity test of the organisms to antibiotics are useful. If there is no organism in the smear of pus, tuberculous infection may be suspected. Aspiration helps to differentiate an abscess from haematoma of scurvy, haemorrhagic diseases and traumatic conditions where only blood is aspirated. If nothing can be aspirated from a breast swelling during puerperium, breast engorgement rather than breast abscess is indicated though clinical features are otherwise the same.

Plain x-ray of the local and adjacent parts can exclude underlying disease of the bone and can detect radio-opaque foreign bodies or calcified guineaworm. Urine examination for sugar and acetone are mandatory for detection of diabetic ketosis, specially in patients with carbuncle. Other investigations should be done according to the probable cause of an abscess.

Diagnosis

When local inflammatory signs, fluctuation and superficial oedema are present, deep seated pus is indicated. Aspiration proves its presence. Smear examination and culture of the pus establish the aetiological diagnosis.

Acute abscess should be differentiated from engorgement, cellulitis and haematoma. In deep-seated breast abscess pus is aspirated, while in breast engorgement it is absent. Swelling in cellu-

litis is not circumscribed, and on aspiration in different directions and depths pus cannot be obtained. Some deep-seated haematoma with fever very closely resemble abscess, but aspiration establishes the diagnosis.

'Pseudo-pus' from degeneration in metastatic lymph nodes, papillary cystadenoma lymphomatosum (Warthin's tumour) and gouty tophi very closely resemble chronic abscesses. Biopsy of aspirated material establishes the diagnosis in each case. Soft specific and non-specific granulomas occasionally simulate chronic abscess. Aspiration test is negative in both the conditions but biopsy can be helpful in diagnosing specific granulomas.

Complications

Adequate drainage has reduced the dread of the immediate complications. Morbidity from delayed complications is also rare which is evidenced by the rare occurrence of amyloid disease now-a-days.

Prognosis

Prognosis depends upon the nature and site of infection and whether the organisms are resistant or susceptible to chemotherapeutic drugs or antibiotics. Vitality of the patient and his resistance to infection and presence of other conditions like diabetes, dehydration etc. also influence the prognosis.

Treatment

PREVENTIVE TREATMENT :

Injection abscesses can be prevented if one is conscious of their causes. These have been mentioned before when dealing with the causes of aseptic abscesses under the section of 'aetiology'. The syringe and the needles must be thoroughly sterilised and the skin of the patient properly cleaned and sterilised using clean and sterile cotton wool and a reliable antiseptic. One should be particularly careful when giving injections of such substances as quinine, iron, arsenic, mercury, bismuth etc. and also when injecting drugs from multiple dose rubber capped vials.

CURATIVE TREATMENT :

In early stages of doubtful suppuration treatment should be given as for acute inflammation. When in doubt diagnostic aspiration is justifiable for deciding early drainage by an incision. Acute inflammation may be treated by chemotherapeutic drugs or antibiotics in adequate doses. Counter-irritants, *e.g.* belladonna plaster may be used to increase the local blood supply. Local heat, magnesium sulphate fomentations, antiphlogistine or short-wave diathermy are helpful in accelerating the stages of inflammation. Fomentation for more than five days damages the skin. Symptomatic treatment for pain, insomnia and fever are often necessary. Aspiration of abscess followed by local injection of antibiotics or chemotherapeutic drugs should not be practised as cure rate is exceptional in such cases since slough cannot be removed by aspiration. Carbuncle of the upper lip (dangerous area of the face) is an ideal instance for conservative management.

Operative treatment is indicated in definite cases of abscess with positive fluctuation or aspiration test, or superficial oedema indicating deep-seated pus. Open drainage is also indicated in early abscess cases where there is danger of spread of infection to important adjacent structures and where decompression is likely to be helpful. It is contraindicated in cases of doubtful diagnosis, furuncle of the upper lip and carbuncle with diabetic acidosis.

Operation.—This should be preceded by pre-operative management which consists of control of diabetes, hypertension, congestive cardiac failure or other diseases if present. Usual preparation of the skin and pre-anaesthesia with atropine, morphine or pethidine and voiding of urine immediately prior to the operation then follows. If not contra-indicated general anaesthesia with ethyl chloride, followed by æther ; or nitrous oxide and oxygen (safe in diabetes); or nitrous oxide and oxygen with æther, trilene or fluothane; or pentothal is ideal. Local anaesthesia is useful in the line of the incision. In a very small abscess, about to burst, quick incision with a sterile sharp blade without any anaesthesia is well tolerated. Ethylchloride spray is not advised, as thawing is painful and it devitalises the skin.

Recumbent position of the patient is best for operation. It can be changed according to the situation of the abscess. If the lesion is on the face or head, tilting should be done to avoid the antiseptic solution or pus going into the eyes. Lithotomy position is required for perineal abscesses.

Before actual incision an abscess should be aspirated and the pus thus obtained should be sent for smear and cultural examination for further guide to the treatment. If blood is aspirated, incision should be avoided and the fluid should be sent for pathological examination to exclude malignant disease.

For acute abscesses incisions are generally made in the dependent position, and may be single or multiple, linear or cruciate, small or big. Non-

viable skin on the top of an abscess about to burst, can be excised. Pus is evacuated and sloughs are removed. Packing checks oozing of blood and keeps the wound wide open, and if repacking is done during the postoperative dressings the wound invariably heals without pocket formation. If a small incision is made for a big abscess, a corrugated drain easily evacuates the pus and a catheter is utilised for instilling drugs and irrigating the cavity. Incision followed by evacuation, gentle scraping and primary closure with drain and a catheter may also be practised. Primary closure ensures early healing provided cellulitis or secondary abscess formation does not occur due to spread of the organisms by scraping. Stitches can be removed if complication sets in.

For chronic abscesses in connection with lymph glands, typhoid or tuberculous osteomyelitis of the rib, the segment of the diseased gland or rib should be removed. Some cases are treated by incision, scraping and closure with drain and a catheter. Packing can also be done if required. In Hilton's method, e.g. for axillary abscess, skin with superficial fascia is incised by a small incision, a sinus forceps or artery forceps is carefully thrust into the abscess cavity and the blades separated. Finger is put in to open the loculi in the main cavity and the cavity is drained.

Complications during operation are haemorrhage, injury to important anatomical structures and contamination of adjacent cavities or tissues.

Postoperative complications consist of excessive oozing of blood, cellulitis and spread of infection along anatomical pathways, effect of damage to surrounding structures, recurrence, multiple pyaemic abscesses, sinus formation and chronicity of wound healing. The causes of chronicity of wound healing are extensive tissue destruction, resistant organisms or undiagnosed specific organisms, ischaemia or venous stagnation or dense fibrosis of the wound, ineffective or non-dependant drainage, downward growth of epithelium over the sinus leading to a cavity, absence of proper rest, irritation and contamination by urine or faeces or digestive juices, excessive therapy with cortisone or testosterone or oestrogens, drug allergy and old age, diabetes, nephritis, protein and vitamin C deficiency, improper fluid or electrolyte balance and alkalosis.

Postoperative treatment—Sterile dressings are essential. Secondary organisms can flare up trouble in spite of local and general antibiotic and chemotherapeutic drugs. The first dressing should be changed after 24 hours and earlier if soiled with pus or blood. To avoid bleeding, the packing should not be removed for 2 to 3 days. A daily dressing is required until discharge becomes negligible, when it can be done two or three times a week. For reducing oedema magnesium sulphate fomentations or magnesium sulphate paste in glycerine is useful. Slight elevation of the limb is advised during the resting period. For sloughs eusol compresses, cleansing with hydrogen peroxide or snipping with scissors is recommended.

During the stage of suppuration watery antiseptic dressings or dry dressings after sprinkling antiseptic powders are advisable, later emollient dressings are preferable.

'Weeping eczema' in and around the wound results if penicillin has been used for local dressings in susceptible, allergic individuals. During the stage of terminal healing, if thin, growing epithelium cannot grow over the everted, exuberant granulation tissue, the best treatment known is snipping of the exuberant granulation tissue with curved ophthalmic scissors upto the level of growing epithelium. Common method of cauterisation with silver nitrate sticks or copper sulphate deserves outright condemnation as it devitalises the tissues and delays healing.

Four to 12 hours instillation of antiseptic solution or irrigations can be done according to the requirement, and then catheter can be removed. Drain is to be removed when the discharge becomes scanty. Generally the wound is not sutured, but if done in some favourable cases, stitches are to be removed a little later than in case of aseptic wounds, i.e. after 9th day. Secondary suturing with drainage can be done in suitable cases.

Underlying disease, pain, insomnia, fever and associated complications are treated in usual lines. Physiotherapy and occupational therapy will help where tissue destruction is extensive.

Summary

1. Abscesses due to injection may be prevented by proper sterilisation of syringe and needle and avoidance of injections which are likely to give rise to necrosis of tissue.

2. An abscess should be incised and evacuated early.

3. Pus should be sent for smear examination and culture.

4. Specific therapy for primary disease should be instituted.

5. Sterile dressings are recommended until the wound is completely healed up.

BLOOD VOLUME AND OPERATIVE STRESS

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PART I

BLOOD VOLUME IN NORMAL INDIVIDUALS

INTRODUCTION

Claude Bernard's concept of constancy of internal environment has revolutionised the study of physiology. A study of separate systems has focussed attention on the interelationship of various system and its assistance in maintaining the internal environment of the body.

Blood along with the tissue fluids constitute the internal environment for the living cells of the body. For the maintenance of individual cell, a constant composition of blood and the tissue fluids is necesary. Maintenance of blood volume is also important for the proper circulation of blood and maintenance of blood pressure, hence also for proper formation of tissue fluids.

In stress and injury, a number of different factors, nervous and hormonal, disturbs the blood volume. The study of blood volume in stress specially surgical stress is important to the surgeons because they have to deal with traumatised tissues, or themselves inflict trauma while operating. Though the importance of the estimation of blood volume in health and disease has long been established, yet the significance of alteration of blood volume following operative stress remains far from clear.

It had been recognised that loss of blood is an important contributory factor for changes in blood volume incidental to surgical process, but it may not be the most important or the only consideration to be thought of in surgical process. Other factors, such as the type of anaeshesia, actual trauma to tissues, changes in ventilation, efficiency of body response to haemorrhage, and operative shock, also play an important role in producing changes in blood volume. A study of the blood volume is also important from the postoperative point of view when considering intravenous therapy.

For checking the findings in abnormal conditions it is essential to have a normal standard as control. Blood volume in normal individuals differs at different places and under different climates. The data on normal blood volume in Indians is very scanty. Only Datta (1948), Chaudhuri *et al* (1951), and Shrivastava (1953) have worked on blood volume in healthy Indians. Hence a study of blood volumes in 50 normal individuals was taken up to serve as control.

MATERIALS AND METHODS

Thirty male and 20 female normal subjects were selected from among the staff and students of the G. R. Medical College and J. A. Group of Hospitals, Gwalior. They were clinically examined, and their E.S.R. was determined to exclude any active illness. They were kept at a basal condition for sixteen hours which included 8 hours bed rest before estimation of blood volume.

Technique—The original technique of Gregersen and Noble (1946) was followed in the present work. As Nickerson's decade photometer which was used in Gregerson's method for estimation of optical density of coloured plasma was not available, spectronic 20 photoelectric colorimeter was used. 0·45 per cent Evans blue solution in double distilled water, previously sterilised and kept in ampoules was used and usually for an adult 5 ml. was injected. In the beginning the photoelectric colorimeter was calibrated. The calibration curve is shown in Fig. 1.

10 ml. of blood was taken from an arm vein and put into a tube labelled 'B' containing required amount of oxalate mixture. The needle was kept *in situ* and through it the dye was injected from a properly calibrated sterile syringe. After 10 minutes, another sample of blood (10 ml.) was withdrawn from the other arm vein and labelled 'B_1'. Both the samples were centrifuged in haematocrit tubes and the reading noted. The plasma collected from tube 'B' was put into an absorption tube labelled 'blank,' and from 'B_1' into another absorption tube labelled 'unknown.' The instrument was set at 620 millimicron wave length and 'blank' absorption tube put in, instrument being set to 100 per cent transmittance of light. The 'blank' was replaced by 'unknown' and the percentage transmittance of light was noted. Then from the caliberation curve equivalent plasma volume was noted. Each time when the blood was drawn a preinjection sample

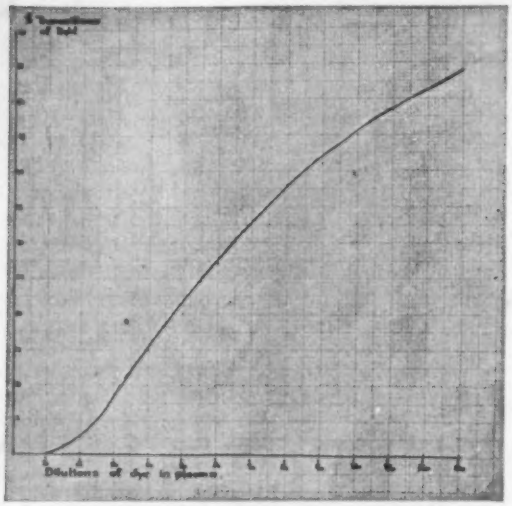

FIG. 1—THE CALIBRATION CURVE IN PHOTOELECTRIC COLORIMETER SHOWING THE PERCENTAGE TRANSMITTANCE OF LIGHT AND DILUTIONS OF DYE IN PLASMA

of blood was drawn before injection of the dye to serve as blank. The total blood volume was calculated from the following formula:

$$\text{Total blood volume} = \frac{\text{Plasma volume} \times 100}{100 - (\text{P.C.V.} \times 0{\cdot}92)}$$

The 0·92 is the correction factor applied to P.C.V. for trapped plasma.

The following precautions were adopted to avoid errors of the dye method.

No tourniquet was applied at the time of drawing blood, to avoid the effect of momentary stasis. Haemolysis was avoided by thorough rinsing of the syringe with normal sterile saline. All precautions were taken to avoid leakage of dye outside the vein.

Estimation of approximate blood loss during an operation—The blood soaked sponges and towels during the operation were collected and rinsed thoroughly in water. This water was measured and four ml. of it was put into an absorption tube labelled 'unknown.' Then a standard dilution of patient's blood in water, which approximately matched the colour of washings of sponges was made and was placed in another absorption tube labelled 'standard.' 4 ml. of tap water was put into another absorption tube labelled 'blank.' The instrument was set to 100 per cent transmittance with wave length 620 millimicrons and 'blank' absorption tube put in the instrument. The 'blank' was then replaced with 'standard' and this was replaced with 'unknown' and the readings noted (Ur.). To know the dilution of blood in the unknown the following formula was used:

$$U = \frac{Ur \times S}{Sr}$$

where U = unknown dilution.

Ur = per cent of transmittance with unknown.

Sr = standard dilution.

S = per cent of transmittance with standard.

After knowing the dilution of blood the total amount of blood in the washings was calculated by the rule of three.

RESULTS

The average values for blood volume and plasma volume obtained in 50 normal individuals (30 males and 20 females) with standard deviations, range, coefficient of variations and mean are shown in Table 1 and 2.

The mean plasma volume is about 5 per cent of body weight taking the mean plasma specific gravity as 1·026 (per cent of body weight = ml./kg. × 1·026).

The mean blood volume is about 9 per cent of the body weight aking blood specific gravity as 1·058 (per cent of body weight = ml./kg. × sp. gr. of blood).

TABLE 1—SHOWING PLASMA VOLUME IN RELATION TO BODY WEIGHT AND BODY SURFACE IN 50 NORMAL SUBJECTS

Items	Per kg. body weight	Per sq. m. body surface area
Range	37·6—107·3 ml.	1111·1—3015·7 ml.
Mean	59·72 ml.	1846·6 ml.
Standard deviation ...	±7·8 ml.	±434·8 ml.
Coefficient of variation	13·6%	23·54%

TABLE 2—SHOWING TOTAL BLOOD VOLUME IN RELATION TO BODY WEIGHT AND BODY SURFACE IN 50 NORMAL SUBJECTS

Items	Per kg. body weight	Per sq. m. body surface area
Range	63·8—148·2 ml.	1979·4—4466·2 ml.
Mean	85·05 ml.	3178·8 ml.
Standard deviation ...	±14·9 ml.	±672·8 ml.
Coefficient of variation	17·7%	20·1%

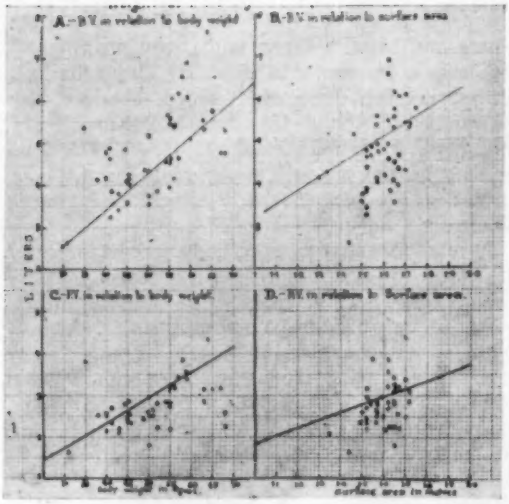

FIG. 2—SHOWING DISTRIBUTION OF BLOOD VOLUME AND PLASMA VOLUME IN 50 NORMAL CASES IN RELATION TO SURFACE AREA AND WEIGHT OF THE BODY WITH REGRESSION LINES

The plasma volume and blood volume have also been graphically represented with regression lines as compared with body weight and surface area in Fig. 2. In both cases poor correlation of plasma volume and blood volume with body weight and surface area has been observed.

DISCUSSION

It is of vital importance to evaluate the figures of normal blood obtained in the present work in relation to the figures obtained by other workers. These are shown in Table 3.

A persual of Table 3 indicates a wide range of variation of the figures for blood volume. The following factors might account for such a disparity in the results:

Nature of the method employed—Much variations in the figures are produced by employing different techniques.

(a) Dye methods. Of the dyes Congo red and T. 1824 (Evans blue) are commonly employed. The error involved in the method with red dyes, such as Congo red and Trypan red, is due to difficulty in matching due to red colour of blood and haemolysis. As such, blue dyes, e.g., T. 1824, were employed.

Fgures of plasma volume employing T. 1824 are usually high because a certain amount of T. 1824 bound albumin circulates outside the vascular compartment causing a corresponding degree of error in estimation of plasma volume. It may be, that this accounts for the discrepancy between estimations based on dye and tagged blood cell dilutions.

(b) Carbon monoxide method. This has many technical difficulties. In addition to carbon monoxide absorbed in the haemoglobin in blood some

TABLE 3—SHOWING FIGURES FOR NORMAL PLASMA VOLUME AND BLOOD VOLUME OBTAINED BY DIFFERENT AUTHORS USING DIFFERENT METHODS

Authors	Method of study	No. of cases	Plasma volume (ml.)		Blood volume (ml.)	
			ml./kg.	% body wt.	ml./kg.	% body wt.
Bischoff (1858)	Bleeding	3	—	—	73	7·6
Salvesen (1919)	Congo red	—	—	—	60	6·5
Rusznyak (1927)	Trypan red	8	44·7	4·7	83·3	8·8
Greisbach *et al* (1928) ...	Dye	—	36	3·7	71	7·5
Ewing & Hinsberg (1931) ...	Congo red	—	—	—	73	7·7
Woolheim (1931)	Dye	—	40	4·1	80	8·1
Corrasco (1931)	Dye	—	57	5·8	100	10·6
Sparks *et al* (1932) ...	Congo red	10	34·4	3·5	64·9	6·9
Datta (1948)	Congo red	6	48	4·9	82·9	8·8
Hurtado *et al* (1937) ...	Violet red	25	42·8	4·4	79·1	8·3
Gibson & Evans (1937) ...	T. 1824	41	44·7	4·6	77·7	8·2
Hallock (1940)	Do.	10	46·4	4·9	89·5	9·5
Gregerson (1944)	Do.	51	44·7	4·6	85·1	·9·0
Chaudhuri *et al* (1951) ...	Do.	50	47·7	4·9	83·1	8·8
Present study	Do.	50	59·7	5·0	85·05	·9·0

of the gas is absorbed by extra vascular haemoglobin and this usually gives low values. This method is more helpful in determination of red cell volume.

(c) Radioactive isotopes. Agglutination or haemolysis of the reinjected red blood cell may produce error in determining the red cell volume by isotope method.

Employing the same technique, as for example the dye method, the following range of variations is noted :

Maximum—

Blood volume = 100 ml./kg.
Plasma volume = 57·0 ml./kg.

Minimum—

Blood volume = 71·0 ml./kg.
Plasma volume = 40·5 ml./kg.

Average—

Blood volume = 81·3 ml./kg.
Plasma volume = 45·4 ml./kg.

The findings in the present study are—

Blood volume = 85·05 ml./kg.
Plasma volume = 59·7 ml./kg.

Our figures for plasma volume are the highest ; and those for blood volume fall within 'average'. The following factors may be responble for such a departure in plasma volume figures :

Personal error—This includes error in injection, mixing, analysis, and haemolysis.

Racial factor—It is probable that blood volume may show minor variations depending upon the race. A perusal of normal blood volume, as observed in different countries, indicates minor variations which could be accounted on racial ground.

Age—Blood volume varies with the age of the individual. Following early infancy the blood volume appears to increase with physical development at about the same rate for both sexes up to puberty. At this point a marked difference between sexes develops. In girls the plasma volume decreases in relation to body wight and height while in boys it increases. However, after sexual maturity has been reached and body growth has ceased the blood volume does not change at least up to the seventies (Sjostrand, 1953).

Climate—It has been shown by Sjostrand (1953) that there is a seasonal variation in blood volume and that it is higher during summer months than in winter. It may be due to the effect of heat causing a peripheral vasodilatation and thus leading to greater escape of the dye from circulation.

Our cases showed poor correlation of plasma volume and blood volume with body weight and surface area as shown in Fig. 2. These findings are in confirmation with those obtained by Sjostrand (1953) and in contradiction with the findings of Chaudhuri *et al* (1951). The following may be the possible explanation for the poor correlation between the body weight and plasma volume :

In most men and women, body weight increases with age owing to progressive collection of fatty tissue, rather than to an increase of metabolically active tissue. Blood volume and total haemoglobin in an average individual do not change after the age of 20, and thus blood volume as a fraction of the body weight decreases with age. Consequently the correlation between blood volume and body weight in adults diminishes owing to variable development of fatty tissues.

Blood volume might therefore be expected to be more closely correlated with 'lean body mass' than actual weight. Lean body mass represents metabolically active tissue (Sjostrand, 1953).

Apart from the development of fatty tissue, constitutional factors in an adult also influence the blood volume. Several investigators report that the endocrines play an important part in haematopoiesis (Gordan and Charipper, 1947 ; Daughaday *et al*, 1948).

Summary

This paper presents a study of blood volume in 50 normal individuals of whom 30 were males and 20 females.

Acknowledgment

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References

Chaudhuri, R. N., Chakravarti, H. and Datta, B. N. *Indian J. M. Res.*, **39** : 237, 1951.

Datta, N. C.—Report of Scientific Advisory Board, I.R.F.A., New Delhi, 1948.

Daughaday, W. H., William, R. H. and Daland, G. A.—*Blood*, **3** : 1342, 1948.

Gordon, A. C. and Charipper, M. A.—*Ann. N.Y. Acad. Sci.*, **48** : 615, 1947.

Gregersen, M. I.—*J. Lab. & Clin. Med.*, **29** : 1266, 1944.

Gregersen, M. I. and Noble, R. J.—*J. Clin. Invest.*, **25** : 158, 1946.

Sjostrand, T.—*Phys. Rev.*, **33** : 202, 1953.

Srivastava, B. N.—Thesis for M.D. examination, Agra University, 1953.

MEDICAL ETHICS IN ANCIENT INDIA

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Precepts for New Medical Graduates

The *Kāśyapa-Saṁhitā* lays down the following precepts for the guidance of new medical graduates:

The physician should wear clean white dress; dress his hair and tie it in a knot. When walking on the road, he must look ahead, far and wide, on all sides and proceed forward. When he meets others or others meet him, he must accost them first. He must be friendly to all. He should not visit the patient's residence uninvited. In the patient's house, he should look at none else, except the patient; should not cut jokes with the maid-servants and with other women in the house; should not refer to their names discourteously; should not talk too much with them on any subject, and should not exhibit excessive affection for them. He should not talk to them or sit by their side in private; should not go to the house of the patient without giving previous intimation; should not reveal the secrets of the household nor exaggerate the bad qualities of the family. When unfavourable or serious symptoms appear in the patient, he should not inform the patient. He should not attempt treatment of a patient whose death is certain or a patient who has an incurable disease or a patient who has not got the necessary facilities for the treatment. He should carefully observe and know various details about the body, age, disease, medicine, etc., and should carry with him all drugs essential for the treatment. He should not have any enmity with other medical colleagues; and may consult them and decide the treatment. If some envious opponents criticise his procedure, he must convince and win them over by his knowledge and experience. He should always speak clearly without ambiguity and doubts, sweetly and ingeniously in a simple and ethical tone, avoiding controversies and according to the law of *Dharma*.

In this manner, the physician who desires the good and welfare of the world, lives a life of righteous conduct and attains happiness, both in this world and in the next.

Code of Conduct and Qualities of a Good Physician

The *Kalyāna Kāraka* lays down the code of conduct a physician should observe and enumerates the qualities a good physician should have as follows:

The physician should not undertake treatment on account of lust, love or greed; not even friendship, enmity or affection for a kinsman should be the reason for treatment; the expectation of earning a reward or fame should not tempt a physician to give treatment. Only one urge and aim, kindness or mercy, i.e., humanitarian feeling should lead the physician to practise the art of healing.

The physician should never think that the practice of medicine yields no benefit to him. Sometimes he may get money; sometimes he may get what he desires; occasionally, he may win fame or friendship; even when he does not obtain any one of these, there is bound to be at least the benefit of practical experience.

Will the earth be without human beings? Can human beings live without drink, food and all sorts of activities? And can such people be completely free from ill health and diseases? Therefore, the physician need never dread unemployment or starvation.

The physician who undertakes treatment should have the following qualities:

He must be a speaker of truth, a man of courage, endowed with patience, blessed with a lucky hand that has achieved numerous cures, one who has witnessed and also practised notable methods of treatment, one who does not get upset under any adverse circumstances. These are the great and noble qualities that a physician entrusted with healing the sick should possess.

The patient, the physician, the medicine and the nurse are the four limbs of treatment. The physician is more important than the other three. He is the basis or prime cause for the rest. There is not much harm or danger if the patient loses faith in his wife or children but if the patient loses faith in the physician, there is no hope of cure for the patient.

Profound study as well as understanding of the sciences and practical skill in administering medicines, achieve success in treatment. If either of these, is lacking or absent, the life of the patient is in doubt or danger. So, only a physician who is equally proficient in theory and practice and is wise and has secured the permission of the King (or State authorities) should undertake treatment of the sick.

When an ignorant physician, without adequate knowledge of sciences, tempted by greed or lust begins to treat the sick, he will be sacrificing the lives of people and become liable for punishment by the ruler (or Government). Hence, the physician should be careful to avoid such predicaments, leading to punishments.

REFERENCES

Kalyāṇa Kāraka, 1940, Sholapur, p. 113.

Kāśyapa-Saṁhitā. 1953, Choukhamba Sanskrit Series, Banaras, p. 60.

CASE NOTES

A CASE OF SACROCOCCYGEAL TERATOMA

With Review of the Literature

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Teratoma has been defined by Willis (1953) as "a true tumour or neoplasm composed of multiple tissues of kinds foreign to the part in which it arises". A teratoma is a true tumour in that it displays some degree of progressive uncoordinated growth and is not merely a quiescent malformation. This differentiates it from various types of cysts, aberrant tissues and malformations. The presence of multiple tissues is one of the most striking features of a teratoma. If any teratoma is carefully examined one will almost invariably find, in addition to skin and its appendages and adipose tissue, neural, skeletal, dental, respiratory or alimentary tissues. And finally, these tissues are foreign to the part in which the teratoma arises.

According to a survey of 82 cases of teratoma by Willis (1953), by far the most common site is the ovary (50 cases) and the next most common is the testis (19 cases). In addition to these he found the incidence of teratoma in other sites as follows: epididymis, 2; retroperitoneal, 3; presacral or sacrococcygeal, 2; anterior mediastinal, 3; intrapericardial, 1 and brain, 2. The sacrococcygeal region is thus one of the sites in the body in which teratomas are occasionally found. Although these lesions are quite rare, they are of sufficient pathological interest. It seems worthwhile to report the following case and review the literature on this subject. Our case is typical in that the patient was a female infant. It is unusual because the tumor was located in the presacral area, instead of bulging into the perineum. For this reason the entire mass could be removed transabdominally.

CASE REPORT

Baby Sudhatai, female, aged 7 months, was admitted to the Miraj Medical Centre on 25-3-57 with a history of difficulty in urination and fever for nine days prior to admission. Urine was passed drop by drop at frequent intervals with much discomfort to the baby. At the same time the parents noticed the appearance of a swelling in the lower abdomen.

On admission, the temperature was normal. Physical examination revealed a well-developed and well-nourished female child. In the lower abdomen a smooth, firm, moderately tender mass was palpable in the midline, rising from the pelvis about 6 cm. above the symphysis pubis. On rectal examination a cystic mass was palpable posteriorly between the rectum and the sacrum. When an attempt was made to aspirate this mass through the posterior rectal wall, a cloudy fluid was obtained which on examination revealed only occasional bacilli and very few pus cells. It was suspected that the mass must be a tumour rather than an abscess, as had been thought of at first, and the diagnosis of sacrococcygeal teratoma was considered. Since the tumour was presenting inside the pelvis rather than posteriorly, it was decided to attempt its removal by laparotomy.

The operation was performed on 8-4-57 under open aether anaesthesia with a polyethylene catheter placed in a leg vein for blood transfusion. The abdomen was opened with a left paramedian incision. On exploration the tumour was found to occupy a position in front of the sacrum and behind the rectum and bulged out of the pelvis into the lower abdomen. It was well-encapsulated and had relatively little blood supply. It appeared to be firmly attached to the coccyx at its lower end. Although the tumour almost completely filled the pelvis, it was possible by gentle combined blunt and sharp dissection to free it from the surrounding structures down into the depths of the pelvis. At this point a cystic part of the mass was inadvertently opened and a large quantity of thick creamy pus-like material escaped. Following this there was more room and the dissection was gradually completed. At the distal extremity of the tumour the attachment to the coccyx was noted and the coccyx was amputated and removed with the tumour. As far as could be seen, there was no evidence of extension of the tumour beyond the capsule. Great care was taken to avoid injury to the rectum which was very intimately adherent to the anterior aspect of the tumour capsule. Haemostasis was secured and no effect was made to reconstruct the pelvic peritoneum. The abdomen was closed as usual. The

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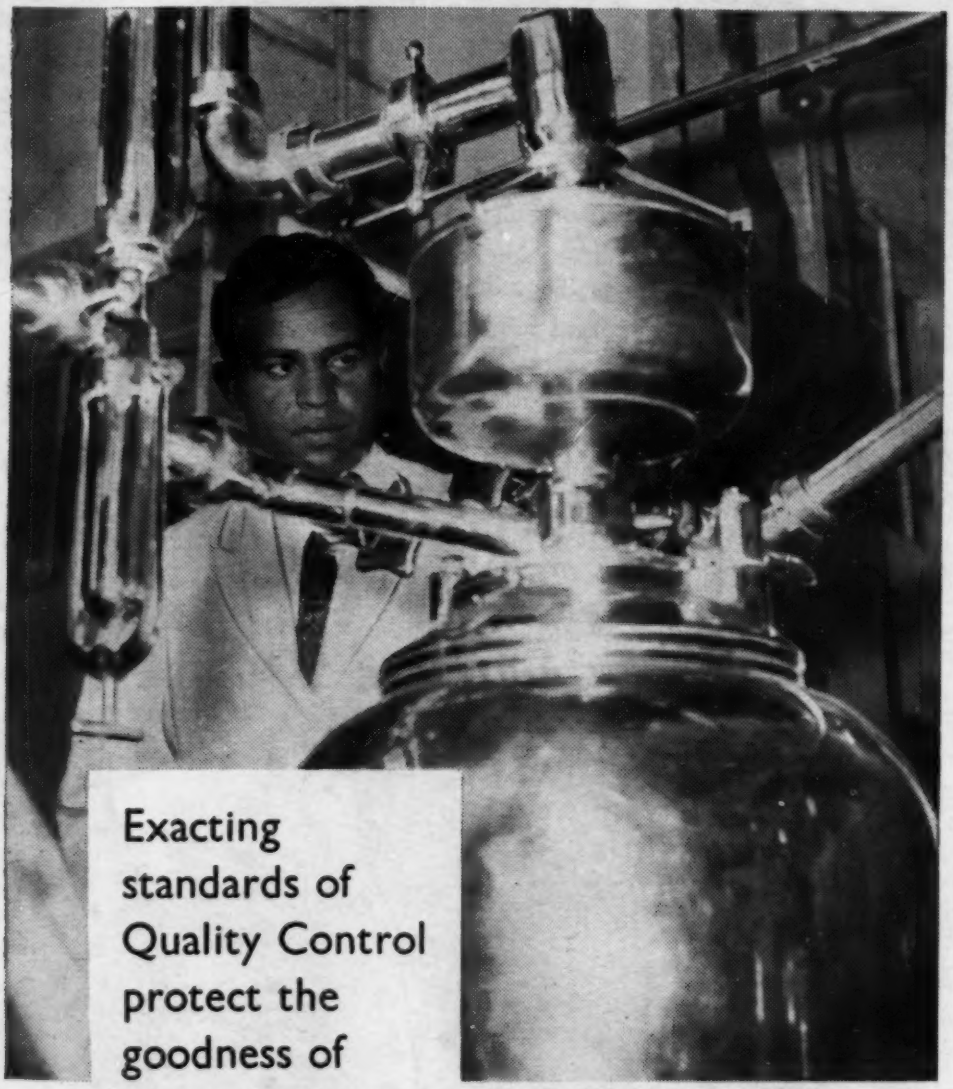

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child received 200 ml. of whole blood during the course of the operation and her condition remained good throughout.

The pathological report was as follows:

"*Gross description:* The specimen is an irregular mass of fatty tissue measuring 8 × 7 × 3 cm. The surface is rough and irregular.

"On section, it is mostly adipose tissue, but along one margin there are some small cysts filled with gelatinous material and a larger cystic space with a whitish inner lining. One small sinus track is filled with cheesy material and fine hairs. About these structures the tissue is denser than the surrounding fat.

"*Microscopic:* Most of the tumour is fatty, but there is also some fibrous tissue mixed with which are bundles of smooth muscle and a few bundles of what looked like rudimentary nerve. Scattered through this are some empty cavities lined by mixed epithelium; in some places squamous, elsewhere transitional, pseudostratified and ciliated columnar of respiratory type. One cyst is filled with desquamated and keratinised material and contains fine pigmented hairs; its lining is squamous.

"*Pathological diagnosis*—Teratoma".

The child made an uneventful recovery following the operation and was discharged from the hospital on 20-4-57. At that time she was able to void urine without difficulty and was free from symptoms.

A recent check-up six months after operation revealed that the child is still doing well and there is no evidence of recurrenc of the tumour.

Review of Literature

Excellent reviews of the subject of sacrococcygeal teratoma have been presented by Gross *et al* (1951), and Palumbo *et al* (1951). The following summary is largely based on these reports.

Sacrococcygeal teratomas are frequently present at birth or noted in early childhood (Gross *et al*, 1951). They may be seen in the newborn as a huge mass or small enough to escape detection. The latter is especially true of those tumors which grow inwardly within the pelvis. It is also interesting to note that, among the various types of teratomas, the sacrococcygeal variety is particularly common among children. In the predominantly adult series of Willis (1953) only two cases of sacrococcygeal teratoma were seen. On the other hand in a series of 24 teratomas in children reported by Anderson (1951), nine were located in the sacrococcygeal region. Gross *et al* (1951) were able to collect from the literature 426 cases of sacrococcygeal teratoma of infants and children. All authors have noted a marked predominance of these tumors in female patients. Of the 40 cases reported by Gross *et al* (1951), 32 were females.

The presacral tumours usually displace the rectum forward and may cause partial obstruction of the urinary tract. There is generally no neurological defect, either of the rectum or of the bladder. Digital examination of the rectum discloses presacral extensiotn of the tumour and extension upward into the pelvis may be palpated abdominally. Roentgenographic studies usually demonstrate very little evidence of destruction of the coccyx or the sacrum in spite of the large size of the tumour. In occasional instances of malignant teratomas there may be definite erosion of these structures. Calcification was demonstrated by x-ray in 43 per cent of the cases in the series of Gross *et al* (1951). In the differential diagnosis one must consider meningocele, chordoma, and pilonidal cysts and sinuses. Meningocele can be differentiated by demonstrating its cystic character and its communication with the cerebrospinal fluid pathways. Chordoma is exceedingly rare in children and characteristically results in extensive destruction of the sacral bones (Shacklefor and Rhode, 1955), which is rarely seen in the case of teratoma. It is occasionally difficult to differentiate a small, infected teratoma from a sacrococcygeal cyst or sinus.

Pathology—The general characteristics of teratomas have already been reviewed. On this basis it is reasonable to consider all tumours arising in the region of the coccyx and possessing derivatives from more than one germ layer as sacrococcygeal teratomas. These tumours vary greatly in their size and in their gross appearance. It is interesting to note that the size does not correlate with malignancy. The tumour may extend outward to form a bulky external mass in the perineal region or it may extend inward to push the rectum forward and form a large mass in the hollow of the sacrum or extending up into the lower abdomen. In rare cases they may enter the spinal canal and grow up extradurally as a finger-like projection. In almost all cases there is a definite attachment of the tumour to the coccyx. The cut surface of the tumours may show solid or cystic appearance or any combination of both. Various types of specialised tissues or formed elements such as teeth or digits may be grossly apparent. Sabaceous material and hair are commonly seen. On careful microscopic examination, tissues representing each of the three germ layers are generally found. These may include practically any type of specialised tissue found in the body, such as skin, gastro-intestinal mucosa, glandular epithelium, respiratory tract structures, cartilage, bone, smooth or striated muscle, and nerve tissue. Sacrococcygeal teratomas may persist as benign, well-encapsulated lesions or they may exhibit evidences of malignancy, usually due to a malignant tumour arising in one of the previously quiescent tissues of the growth. In Gross *et al's* (1951) series of 40 cases, 11 were histologically malignant and seven of the latter demonstrated gross evidence of malignancy in the form of local invasion or metastasis.

Treatment—In the absence of metastasis, all patients with sacrococcygeal teratoma should be treated surgically. In case of large teratomas in infants (Gross *et al*, 1951) it is usually possible to dissect out the tumour

without injury to the surrounding structures. In most cases where the tumour present as a large mass in the perineal area, the perineal approach is preferred. The technique of this operation has been very well described and illustrated by Gross *et al* (1951).

However, the perineal approach is not suitable for all cases of sacrococcygeal teratoma (Gross *et al*, 1951), especially where the tumour is extended into the retroperitoneal space above the promontory of the sacrum. In some instances (Palumbo, *et al*, 1951), the entire tumour is located anterior to the sacrum and coccyx and is best removed by abdominal approach.

Results—Out of 40 cases (32 younger, 8 older) reported by Gross *et al*, (1951) the tumour was resected in 33 and amongst them there was one postoperative death. Of the 32 patients in the younger group, the tumour was surgically resected in 29, and 26 were alive and apparently free from the disease. In the older group of 8 patients, 4 already had distant metastases at the time of admission so that a radical attempt at removal of the tumour was possible only in the remaining 4 patients. Of them three were apparently well for several years. It is obvious that the prognosis is much better when the tumour is recognised and treated in infancy or early childhood. An analysis of the late results in the series also indicates the importance of total resection of the coccyx during removal of the sacrococcygeal teratoma. In 19 cases the coccyx was not resected, or was only partially excised. Seven out of them showed recurrences, while it was not observed in 10 cases of complete resection of the coccyx.

Conclusion

Sacrococcygeal teratomas are true tumours in which are found tissue elements derived from all three of the primordial germ layers. They are usually benign but may be malignant. They are usually observed in infants or young children and more often in females.

Diagnosis is not difficult in most cases. The treatment is surgical excision, which should be attempted in all instances, regardless of the size of the tumour. Excision need not be radical, but must be complete and must include the coccyx, to which the tumour is generally attached. Either the perineal or transabdominal approach, or a combination of the two, may be used, depending on the direction of extension of the tumour.

Summary

A case of sacrococcygeal teratoma in a 7 month old Indian girl is presented. The case is unusual in that the tumour was entirely presacral and had enlarged sufficiently to compress the bladder and interfere with micturition. It was successfully removed through a suprapubic incision.

References

Andersen, D. H.—*Cancer*, **4**: 890, 1951.

Gross, R. E., Clatworthy, H. W., Jr., and Meeker, I. A., Jr.—*Surg. Gynaec. & Obstet.*, **92**: 341, 1951.

Palumbo, L. T., Gross, K. R. and Paul, R. E.—*Ann. Surg.*, **133**: 421, 1951.

Shacklefor, R. T. and Rhode, C. M.—*Ann. Surg.*, **141**: 952, 1955.

Willis, R. A.—Pathology of Tumours, 1953. Butterworth, London, p. 940.

TUBERCULOUS ABSCESS OCCURRING AT THE SITE OF PENICILLIN INJECTION

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Quite a number of cases of tuberculous abscess occurring at the site of penicillin injection have been reported in the literature. The present case differs from others in some important respects, hence the justification for reporting it.

Case Report

M. K., male child, aged 3 years, was brought to the outpatients' department with a history of fever and cough with expectoration for 2 days, 1½ years ago. Some mixtures were prescribed and 4 injections of procaine penicillin given. Fever subsided in 4-5 days but the cough continued for 1½ months. After about 2½ months, the child developed an abscess over the left gluteal region at the site of the penicillin injection. The child was taken to the surgical outpatients' department on 18-4-59. Microscopic examination of the aspirated material showed acidfast bacilli—each field was teeming with the bacilli.

The child was referred to the T.B. Clinic for follow-up. A skiagram of the chest showed the lungs to be clear. The child was admitted on 28-4-59 in the paediatric section of the surgical ward. The duration of the abscess at the time of admission was about 2 months. The abscess was about 2½" in diameter, soft, fluctuant, occupying the upper and outer quadrant of the left buttock. The child was afebrile. X-ray examination of the hip bones demonstrated no bony lesion. The total and differential blood counts showed no abnormality. Unfortunately, E.S.R. estimation was not done. The abscess was again aspirated and acid-fast bacilli were demonstrated. It was incised on 30-4-59 and thick creamy material was scraped out. The patient was given streptomycin, ¼th g., twice daily and INH, 25 mg., twice daily since admission. The wound

healed up leaving only an indurated feeling at the time of discharge on 16-5-59.

Investigations—W.B.C.—9,200 per c.mm. with polymorphs 60 per cent, lymphocytes 34 per cent, monocytes 2 per cent and eosinophils 4 per cent.

Hb.—10·09 g. per 100 ml.; R.B.C. 4·01 million per c.mm.

Stool—nothing abnormal was detected.

Aspirated pus material showed presence of A.F.B. in large numbers on three occasions. Pus cells were also present; Routine culture was sterile. Culture for A.F.B. was also sterile. Guinea-pig inoculation test for A.F.B. was negative.

Skiagram of both the hip joints—did not show any abnormality. Skiagram of the chest showed that the lungs were clear.

Follow-up—In July and August, 1959, the child was admitted twice in the paediatric department of the medical ward for colitis. Each time the duration of hospitalisation was about on week. Stool examination did not reveal any causative organism. The child was receiving PAS at this time and was having persistent cough intermittently. His weight was 17½ lb. on the last day of August, 1959. Streptomycin injection was continued up to 30-6-60. (The child was supposed to be receiving PAS, but it was doubtful whether the child actually had any).

The child's present weight is 22 lb. (i.e., a gain of 4½ lb. in one year approximately). He is perfectly well except slight undernourishment and anaemia. Locally, only a small healed scar can be felt. Recent x-ray examination of the chest demonstrated the lungs to be clear, and to our great surprise Mantoux intradermal test became negative.

Comments

There were three possibilities that came to our mind, viz., (1) that the abscess was caused by *M. tuberculosis*, (2) that it was due to atypical (chromogenic) tubercle bacilli, and (3) that it was due to some other acid-fast organism.

The possibility that tubercle bacilli were introduced locally through the syringe cannot be entirely excluded. Although a separate syringe is used for each of the different types of antibiotics and although a freshly boiled needle is used for each injection, it is still possible that the syringe which is not changed at every injection might have contained tubercle bacilli.

Blacklock (1957) described three cases of abscess following penicillin injections in which tubercle bacilli were isolated. Moreover he performed a series of experiments in rabbits and guinea-pigs in which he proved that if at any given time, tubercle bacillaemia were present, injection of penicillin or peptone or even saline at remote muscular points may lead to abscess formation, from which tubercle bacilli could be isolated. The theory is that phagocytic leucocytes are attracted to the site of the injection (trauma) and that if at the same time there is a focus of tubercle bacilli in the body, phagocytic leucocytes containing injested bacilli may also be attracted to the site of the trauma and set up a tuberculous abscess at the site. Blacklock (*loc. cit.*) succeeded in producing such abscesses following injection in experimental animals by direct inoculation into the lungs or after injection produced 6 months previously. Not only muscle but also joint infections were produced under similar experimental conditions.

Douglas (1950) described nine cases in children, aged 1 month to 7 years, in whom similar abscesses were formed after penicillin injection and in whom no focus of infection was discovered. Forbes and Strange (1949) described an identical case in an adult. In all these cases however typical *M. tuberculosis* were found at the site of the abscess.

A similar pathogenesis can be stipulated for atypical tubercle bacilli which may have been present at other sites in the body.

However both the above explanations seem unlikely. About 25 bacilli were seen per microscopic field in the stained specimen of pus. It is most unlikely that both culture and guinea-pig inoculation should be negative. Chromogenic bacilli may have no effect on the guinea-pig, but they usually produce a good growth on culture media. Another important point is that in our case the Mantoux reaction was negative. We are therefore left with the third possibility, namely infection by other acid-fast organisms. Here we are on very uncertain ground. The available literature does not reveal any similar report. However there is one other interesting possibility. Recently two acid-fast organisms named *Mycobacterium ulcerans* and *Mycobacterium baleni* have been isolated, one in Sweden and the other from an Australian swimming bath which have been incriminated as causing skin lesions in man.

These lesions have been reproduced in animals and although there has thus far been no mention of their causing superficial skin abscesses, we feel that this may be a very likely explanation in our case.

Our purpose in reporting this case is to see if other workers have had similar experience, and also to plead for more refined culture and animal investigations in cases of abscesses following injections of antibiotic, particularly penicillin.

Summary

A case of tuberculous abscess at the site of penicillin injection is presented. Three probable aetiological factors are discussed and the present case is thought to be caused by acid-fast bacilli other than *Mycobacterium tuberculosis*. The purpose of reporting the case is mentioned.

References

Blacklock, J. W. S.—*Proc. Roy. Soc. Med.*, **50**: 61, 1957.

Douglas, D. M.—*Lancet*, **1**: 92, 1950.

Forbes, G. B. and Strange, F. G. St. C.—*Ibid*, **1**: 92, 1949.

JOURNAL OF THE
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CALCUTTA, SEPTEMBER 16, 1961

HYPERTENSION

The problem of hypertension and of its variant, viz., essential hypertension has been a subject of research both extensive and intensive. The concept of essential hypertension appears to be an offspring of an unhappy marriage of thought and word—solemnised by ignorance as the sole officiating priest. In essential hypertension, "what is essential is the investigation and knowledge of its aetiology and pathogenesis, not the hypertension."

At present we know a good deal about the morbid anatomical changes in the brain, heart, kidneys, etc., due to continued hypertension and their physiological effect on the general health of the individuals suffering from the disease. But our information of the aetiology of this disease is admittedly scanty. Therefore our efforts at treatment, without being specifically projected, remain unsatisfactory.

Hypertension does not always produce symptoms. It is a common experience of clinicians that in some cases the increased arterial tension is often not felt by the patient, and in others again a reduction in the level to which they are long accustomed makes them feel unwell. This is explained by the fact that the increase in the vascular tension is recorded by a mute machine, i.e., the sphygmomanometer which is entirely incompetent to assess the tenacity of the emotional and temperamental make up of the individual or the inherited elasticity of his vital rubber (arteries) to withstand the onslaught of the pathological process. The symptoms due to increased tension vary according to the organs particularly involved, e.g., heart, kidney, brain, etc. In the heart coronary insufficiency or cardiac decompensation, in the kidney azotaemia and frank or microscopic haematuria, and in the brain transient ischaemia or oedema which are reversible or cerebrovascular accidents which are irreversible, are the usual manifestations. The end is in most cases due to the failure of the pump (heart), the tubing (vessels) or the filter (kidney). The genetically acquired qualities may to some extent account for the 'how and why' of the different effects of the hypertension in different individuals. These qualities determine the vulnerability of the vascular architecture of the various organs such as the heart, kidney and brain to such varied factors as biological behaviour, endocrine endowments, metabolic make up, or psychic set up of the individuals. The difficulty of a wide comprehension of these multiple and rather mysterious agents involved in the genesis of hypertension has kept the aetiology ill-defined, diagnosis difficult, prognosis puzzling and treatment tortuous.

There does not seem to be any fault with the heart to which hypertension could be attributed. Here the heart does not sin—it is sinned against. The fault may be in the kidney or in the vessels—with a view that some defect in the excretory or secretory activity of the kidney might explain the genesis of the hypertension, quite a deep dive in the physico-chemical components in the glomerural filtrate and the tubal contents has been made and this, though not unrewarding, has yet only emphasised the necessity for further research. The hypothesis that the vessels may give us a clue to elucidation of hypertension has been considered and therefore the records of systolic and diastolic pressure curves, observations of optic fundi and

tracing of E.C.G. are scrutinised in diagnostic practice and investigations with pharmacological agents to produce pressor or depressor effect have been made. The pressure values reached, and the duration of the effect under both the pressor and depressor agents were studied and found to remain the same in essential hypertension as in nephrogenous hypertension. So the tests appeared not to differentiate the two types of hypertension. The 'cold test', i.e., immersion of one arm of the patient in water with temperature of 4°C is used as a pressor agent and 10 ml. of sodium bromide 10 per cent. I.V. is used as a depressor agent. These tests carried out separately failed to differentiate the essential from the renal hypertension. However a new test has been devised, the 'crossed test'[1] wherein the reactivity of the patient to the cold test is first separately studied ; then 10 ml. sodium bromide 10 per cent is given I.V. to produce depressor effect. The effect is maximum within an hour and lasts on an average for 2 or 3 hours. Half an hour after the sodium bromide injection another 'cold test' is carried out. The reaction of the patient to this 'crossed test' in the shape of pressure variations is negative in endocrine and neurogenous hypertension, in initial phase of essential 'hypertension' and in initial phase of glomerulonephritis. The test is positive in subacute and chronic forms of nephritis, in advanced stage of essential hypertension and in arteriosclerotic hypertension. For the diagnosis of the aetiology of hypertension, we have to be very critical to accept every new test and new conclusion. The "crossed test' however throws a ray of light on the path where we may profitably steer further in our search for the aetiology of hypertension of varied types. The treatment of hypertension as it stands today is to expose a symptomless hypertensive to the peril of mecamylamine ileus, veratrine emesis, reserpine psychosis and of hydralazine lupus. If this is true, and it is so as we know it to be, the question arises as to what criteria should indicate the utility of our therapeutic interference. To us they appear to be the age of the patient in whom the sphygmomanometer registers persistent hypertension, and symptoms like headache on waking, and exertional dyspnoea. When hypertension occurs in a person past middle age, or is unaccompanied by the above mentioned symptoms, the best policy for the medical care of the patient is that of 'wait and watch' instead of 'push and pull'. When the brain, heart and kidney are involved, the physician should recognise his defeat and should not make matters worse by trying one drug after another from the plethora of hypotensive drugs with various permutations and combinations. There are really a few reliable drugs at our disposal. These are rauwolfia, ganglion blocking agents, hydralazine, veratrum and chlorothiazide. But these drugs are no more innocent than what has been portrayed above.

We should better admit the truth expressed in the following lines[2]. "It seems to me we should admit, though I anger some friends when I say this, that in using the new hypotensive agents now in fashion we are fighting fire with fire all along the line. Would it not be fine if most of the money that is competitively poured by the pharmaceutical manufacturing houses into the race for drugs with ameliorative effect in hypertension were to be channeled into support of fundamental research of the disease hypertension itself".

[1] NAZZI, V. AND DUGHERA, I—*Gazzila Sanitaria*, **9** : 3; 1960.

[2] EDITORIAL—Year Book of Drug Therapy, 1954-55. Year Book Publishers, Chicago, Ill.

CURRENT MEDICAL LITERATURE

Glucose and Cortisone-Glucose Tolerance in Normal and 'Prediabetic' Humans

LAMBERT, T. H., JOHNSON, R. B. AND PAUL, G. R. (*Ann. Int. Med.*, **54**: 916, 1961) from the Scripps Clinic and Research Foundation, La Jolla, Calif., write:

Three hundred active subjects iscluding controls, diabetics, and relatives of diabetics were subjected to a standard glucose tolerance test and in 150 of these individuals the test was repeated after cortisone was administered orally. Simultaneous capillary and venous glucose levels were determined during all tests.

Criteria for interpretation of both standard and cortisone-glucose tolerance tests are presented, based upon a statistical analysis of data obtained from normal patients who had no diabetic relatives.

Ninety-three per cent of apparently normal subjects with no family history of diabetes were found to be non-diabetic, 4 per cent were borderline, and 3 per cent were found to have frank diabetes after a standard glucose tolerance test. After a similar test for the diabetic relatives, 90 per cent were non-diabetic, 5 per cent were borderline, and 5 per cent proved to have frank diabetes.

Ninety-four per cent of non-diabetic individuals with no genetic predisposition had a negative response and 6 per cent a positive response to the cortisone-glucose tolerance test, whereas 76 per cent of the non-diabetic subjects with diabetic relatives had a negative and 24 per cent a positive response.

The response to cortisone itself in the subjects with a family history of diabetes was greater than the cortisone response of the group with no hereditary background; however, this increase in response lacked significance ($p > 0.9$). These data indicate that there is limitation to the ability of the cortisone-glucose tolerance test in the prediction of diabetes mellitus.

Thyrocardiac Disease and Its Management with Radioactive Iodine I^{131}

DELIT, C., SILVER, S., YOHALEM, S. B. AND SEGAL, R. L. (*J.A.M.A.*, **176**: 262, 1961) from the Department of Medicine, the Thyroid Clinic and the Andre Meyer Department of Physics, The Mount Sinai Hospital, from the experience of 1,603 hyperthyroid patients treated from 1947 to 1954 out of material of over 3,000 patients treated to date observe:

There were 187 with congestive failure, 30 with angina pectoris and 32 with both congestive failure and angina pectoris. In addition, there were 107 patient with atrial fibrillation but without congestive failure or angina.

The females had a lower incidence of angina pectoris and "pure" fibrillation than could be expected on a statistical basis. Advancing age increased the incidence of all cardiac manifestations. The duration of the thyrotoxicosis before treatment had only a relatively slight effect on the appearance of cardiac symptoms. There was no difference in the total number of doses of I^{131} necessary to control the cardiac and the noncardiac patients in this series. The total dose of I^{131} administered was higher in the cardiac patients but part of this overdosage was deliberate. Corrected for age, nodular goitre seemed more likely to produce cardiac symptoms, particularly in the older age groups. Tachycardia, of almost similar degree, was present in both the cardiacs and non-cardiacs and responded almost equally well to I^{131} therapy.

Atrial fibrillation was present in 15 per cent of the entire series and in 51 per cent of the "cardiacs" before treatment. All but one of the "pure" fibrillators reverted to sinus rhythm and 24 per cent of the cardiacs continued to fibrillate. Atrial fibrillation was uncommon with angina pectoris.

Hypertension, systolic and diastolic, was more frequent in the cardiacs and after therapy the systolic pressure fell and diastolic pressure rose both in the cardiacs and in the others.

There was striking improvement in all types of thyrocardiac disease as a result of I^{131} therapy. Angina and uncomplicated atrial fibrillation were relieved in almost 100 per cent of the cases.

The myxoedema (permanent) rate for the entire series was 7 per cent. For the cases of angina pectoris it was 13 per cent. Part of this increase was deliberate. The cardiac patients contributed a disproportionately large number of the total deaths. The recurrence rate was 0·75 per cent for the entire series and 1·2 per cent for the cardiac group.

Renal Amyloidosis

LINDEMAN, R. D., SCHEER, R. L. AND RAISZ, L. G. (*Ann. Int. Med.*, **54**: 883, 1961) from the Medical Research Service, Veterans Administration Hospital, and the Department of Medicine, State University of New York, Upstate Medical Centre, Syracuse, New York, write:

Of 17 cases of amyloidosis seen at this centre between 1954 and 1960, 15 had renal involvement. The kidneys were affected in four of five patients with primary amyloidosis. The characteristic clinical manifestation was the nephrotic syndrome. In four cases in this series, the diagnosis was established by renal biopsy. In one patient, there was a clinical remission of the nephrotic syndrome apparently due to primary amyloidosis. Some other unusual features of renal amyloidosis are discussed.

New Concepts of Physiology of the Carotid Sinus Reflex

SELVIN, B. AND HOWLAND, W. S. (*J.A.M.A.*, **176**: 12, 1961) from the Department of Anesthesiology, Memorial Hospital for Cancer and Allied Diseases, write:

The carotid sinus reflex is a common occurrence during surgery of the neck. In the present study 600 patients this reflex occurred most often in hypertensive men over 50 years of age. The most common reflex response was hypotension and bradycardia. However, 4 other patterns of cardiovascular response were observed. There was no relationship between the occurrence of the reflex and the administration of rauwolfia, tranquillisers,

preoperative medication, or anaesthetic agents. Response to therapy with procaine and atropine indicated that sympathetic cholinergic fibres were important in mediation of this reflex.

Radiologic Estimation of Heart Volume

HANSON, J. S. (*J.A.M.A.*, **176**: 16, 1961) from the Cardiopulmonary Laboratory of the College of Medicine, University of Vermont, Mary Fletcher Hospital, write:

Heart size can be determined by a simple radiologic method here described. The method, widely used in Europe, depends on 3 measurements made on standard posteroanterior and lateral chest films at focal distances from 150 to 200 cm. The heart volume is calculated by slide rule from these data. Correlations of radiologically determined heart volume with other anatomic and physiological variants, such as calculated body surface area, total haemoglobin content, and physical working capacity, provide indices for recognising cardiac enlargement and other cardiophysiologic abnormalities. This method has theoretical and practical advantages, and the author believes it to be the most uniform and precise plan for utilising radiologic data for serial determinations of heart size.

Long-Term Anticoagulant Therapy in Coronary Disease

THOMAS, A. B., SCALLEN, R. W. AND SAVAGE, I. R. (*J.A.M.A.*, **176**: 181, 1961) from the Department of Internal Medicine and the School of Public Health, Minneapolis, write:

In a group of patients with coronary disease, the rate of thromboembolic recurrence has been shown to be significantly lower during uninterrupted anticoagulant therapy, as compared with the rate of recurrence after discontinuance. This difference has been shown to increase in magnitude with time.

The lower recurrence rate observed during treatment has been shown to obtain only as long as treatment was continued. Upon discontinuance, the advantage maintained by the treated group was lost rapidly.

A favourable effect on mortality in patients treated with anticoagulants is suggested. In patients without evidence of diabetes or cardiac decompensation, a very low death rate was observed throughout the duration of continuous therapy.

Anticoagulant Therapy in Intermittent Cerebrovascular Insufficiency

SIEKERT, R. G., MILLIKAN, C. H. AND WHISNANT, J. (*J.A.M.A.*, **176**: 19, 1961) from the Sections of Neurology, Mayo Clinic and Mayo Foundation write:

Two hundred and thirty patients with intermittent focal cerebrovascular insufficiency were followed for periods varying from 1 to more than 5 years. A comparison was made as to the occurrence of cerebral infarction between those who received anticoagulant therapy and those who did not receive such treatment. Of 115 patients treated continuously, 4 (4 per cent) had a cerebral infarction. Of 40 patients who did not receive this treatment, 16 (40 per cent) had a cerebral infarction. Of 75 patients treated for a limited period (months), 24 patients (32 per cent) had a cerebral infarction months or years after discontinuance of anticoagulant therapy. The occurrence of intracerebral haemorrhage was the same in treated and untreated patients. It is concluded that this therapy is associated with a reduction in cerebral infarction in this particular category of cerebrovascular disease.

Heart Block and Adams-Stokes Syndrome Treated with Sustained-Action Isoproterenol

DACK, S. AND ROBBIN, S. R. (*J.A.M.A.*, **176**: 505, 1961) from the Division of Cardiology, Department of Medicine, Mount Sinai Hospital, write:

Sustained-action tablets of isoproterenol were administered orally to 15 patients with atrioventricular heart block and Adams-Stokes attacks.

A beneficial effect occurred in 13 patients. Sustained-action isoproterenol tablets helped to maintain a more stable cardiac mechanism without ventricular arrest and increased the rate of the idioventricular pacemaker. Objective evidence of a beneficial effect on the ventricular pacemaker was noted in 5 patients.

Side-effects were observed in only 4 cases and consisted of tachycardia or tremor. These necessitated discontinuance of the drug in 2 cases.

Comparison of sublingual and oral administration of isoproterenol in several cases indicated that oral medication produced a more sustained increase in heart rate and had less tendency to produce palpitation, tachycardia, or anginal pain in susceptible individuals than sublingual administration.

Chloroquine in Sarcoidosis

MORSE, S. I., COHIN, Z. A., HIRSCH, J. G. AND SCHAEDLER, R. W. (*Am. J. Med.*, **30**: 779, 1961) from the Rockefeller Institute, New York, from the analysis of the results of chloroquine in seven cases of sarcoidosis observe:

In each instance there was considerable improvement of the cutaneous lesions. Regression of extracutaneous lesions was more variable, but improvement was often observed; this was particularly true of mucous membrane and thoracic node involvement. Associated with the clinical response, elevated sedimentation rates and high gamma globulin levels returned toward normal. It is suggested that chloroquine may be a useful drug for the treatment of many patients with sarcoidosis, and further studies are in progress to define the situations in which its use is of most benefit.

Acute Barbiturate Intoxication

DOBOS, J. K., PHILLIPS, J. AND COVO, G. A. (*J.A.M.A.*, **176**: 268, 1961) from the Medical Service, Roosevelt Hospital, write:

Several conclusions may be drawn from our experience with this group of 141 patients admitted to the hospital while in barbiturate-induced coma.

The duration of coma is not significantly altered by the use of analeptic drugs, and, with wide individual differences, appears to vary directly with its depth. Intake of alcohol with a barbiturate contributes to the depth of coma but not to its duration. Not one death occurred in those patients who had ingested both alcohol and a barbiturate drug. The major complications of coma are bronchopneumonia, which was a contributory cause of death in 3 of our 6 fatalities and occurred in 11·4 per cent of our cases and cardiac arrhythmias, which occurred only in those patients treated with analeptic drugs (5·7 per cent of all our cases).

The mortality rate for our group of patients was 4·3 per cent, 2 deaths occurring in the group of 64 patients treated supportively and 4 in the group of 77 patients treated with analeptic drugs. The 5 per cent over-all mortality associated with barbiturate-induced coma seems, according to all reports, to remain constant with whatever therapeutic regimen is used. In our opinion, intensive and meticulous supportive care is, at present, the therapy of choice in most cases of acute barbiturate intoxication.

New Therapeutic Agent for Tinea Versicolor

ZIMMERMAN, E. (*J.A.M.A.*, **176**: 23, 1961) from Huntington, N.Y. writes :

Successful therapy of the commonly seen superficial fungus infection, tinea versicolor, has been a long-standing problem, since available therapeutic measures have been only partially effective and recurrences have been frequent. Treatment required daily baths, followed by application of malodorous preparations for prolonged periods of time. The average patient soon tired of this routine and decided 'to live with his fungus'. Then, during the summer months, when the patient acquired a tan and the 'white spots' (achromia parasitica) became quite prominent, especially with the wearing of a bathing suit, he sought treatment and once again carried out the physician's instruction. However, with the coming of fall, the tan faded, the affected areas were covered with more clothing, the reddish tan patches were less obvious, and the patient's enthusiasm for his therapeutic regime waned until he stopped all treatment. In many cases, this became a perennial cycle. To complicate matters further, many of the preparations used produced irritations, while the sodium thiosulphate solution dried, leaving a residue of sticky crystals on the skin. In spite of its efficacy against a variety of superficial fungi, griseofulvin has proved inactive against *M. furfur*. Although more extensive evaluation must be undertaken, this preliminary study indicates that 9-aminoacridinium 4-hexylresorcinolate should prove to be the most effective therapeutic agent for tinea versicolor in the dermatologic armamentarium.

Abdominal Angina—Diagnosis and Surgical Treatment

MORRIS, G. C. JR. AND DEBAKEY, M.E. (*J.A.M.A.*, **176**: 89, 1961) from the Cora and Webb Mading Department of Surgery, Baylor University College of Medicine, write :

The abdominal angina syndrome is a manifestation of intermittent gastrointestinal ischaemia produced by arteriosclerotic narrowing or occlusion of the coeliac and superior mesenteric arteries. Most outstanding of various gastrointestinal symptoms are post-prandial pain, weight loss, and constipation.

Routine investigative studies may be negative, although x-ray studies with barium may suggest disturbed intestinal motility and stool examinations commonly exhibit excessive fat and occult blood. Aortography with exposure of the film in the lateral projection will demonstrate the occlusive processes in the coeliac and superior mesenteric arteries. Surgical revascularisation of these vessels is desirable not only to relieve disabling symptoms but to prevent ultimate mesenteric thrombosis.

Abdominal Aortic Aneurysm

LORD, J. W. JR. AND IMPARATO, A. M. (*J.A.M.A.*, **176**: 93, 1961) from the Department of Surgery, New York University Post Graduate Medical School, write :

The frequency of abdominal aortic aneurysm has been increasing. The varying clinical manifestations and resulting difficulties in diagnosis and treatment are illustrated by 10 case histories. Among 43 patients treated by elective resection of such aneurysms in 5 years, there were only 2 hospital deaths. This is in marked contrast to the high mortality rate of 50 per cent within 2 years in 53 patients not treated surgically. In the last 44 consecutive elective resections performed by the authors there were but 2 operative deaths. Elective resection is therefore advocated for all patients with abdominal aortic aneurysm who are good surgical risks. It is recommended that, when other serious abdominal conditions are also present, priority be given to the aneurysm.

Villous Adenomas of the Large Intestine with Fluid and Electrolyte Depletion

FINDLAY, C. W. JR. AND O'CONNOR, T. F. (*J.A.M.A.*, **176**: 404, 1961) from the Medicine Service, Lawrence Hospital, Bronxville, N.Y. and the Surgical Service, Presbyterian Hospital, New York City, write :

Patients presenting with severe electrolyte depletions who have a history of mucorrhoea per rectum should be suspected of having a villous adenoma of the lower bowel with or without carcinomatous changes. Following electrolyte and fluid replacement, the tumour should be identified and evaluated for carcinomatous changes. Excision of the tumour must be performed to effect a cure and it may be difficult to maintain normal levels of serum electrolytes before its removal. Conservative resection of benign villous adenomas and tumours with intramucosal carcinoma may be performed with caution. If there is invasive carcinoma or lymph node metastasis, the surgery should be the same as for any other carcinoma of the rectum.

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Guenther, Dtsch. med. Wschr. 76, 41 : 1271, 1951

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HPO. 46

CURRENT TOPIC

THE HAZARDS OF FOOD ADDITIVES

Adulterants, contaminants, and additives are words of opprobrium to the great majority of food consumers, and not without well-founded historical reason. As recently as 1950, 10,000 Moroccans were suddenly and mysteriously stricken with paralysis. This was not due, it was found, to some new disease or some new and severe manifestations of an old disease, but to the addition of mineral oil to the cooking oil they had bought. Adulteration of food in this way by unscrupulous merchants with no thought to its consequences to health is not new. It used to be common practice to add alum to bread to improve its whiteness, and it was by no means rare to add ferrous sulphate to beer to strengthen its taste, or salts of copper and lead to confectionery to give it bright colours, or red lead to cheese to increase its attractiveness to the eye. Additives disguised the deterioration of the food, made it look fresh and attractive when it was old and stale, or helped to pass it off as something other than what it was. Except in the most flagrant cases, too, it was relatively easy to escape detection; for the prevailing state of scientific knowledge up to the nineteenth century made it extremely difficult to convert suspicion of adulteration into certainty. Besides, it was customary to preserve food by the addition of salt, nitre, calcium sulphate, or other preservatives, and it was easy to argue that the substances added were intended in good faith to keep the food in good condition.

Nowadays, adulteration of food is punished in most countries under food and drugs acts intended to protect consumers from the dishonest practices of adulterators, adulterants usually being defined as ingredients added fraudulently to increase the bulk or weight or to conceal inferiority of quality. The fact that adulteration is an offence does not mean that it does not continue to be practised, it being probable that the extent to which it is depends directly on the tightness of the control exercised by the authorities, which obviously varies widely from country to country. But, even if adulterants are no longer being added to food as much as they were, there is a never-ending list of new substances being added deliberately to food. With the increasing use of chemicals in food production, too, the food is more and more frequently found to be contaminated with, for example, residues of pesticides. The ramifications of the food trade are world-wide, and this problem of substances added to or contaminating foodstuffs is nowadays not a local but a world problem. "The size of the problem", said an FAO/WHO Joint Conference on Food Additives that met in 1955, "makes it impossible for any one individual country to undertake all the investigations needed."

This same Conference adopted a definition of food additives that had been proposed by a Joint FAO/WHO Expert Committee on Nutrition. They are "non-nutritive substances which are added intentionally to food, generally in small quantities, to improve its appearance, flavour, texture, or storage properties".

The Justification for Food Additives

What justification is there for adding any chemicals at all to food? A Joint FAO/WHO Expert Committee on Food Additives that met in 1956 examined the general principles governing the use of additives. They may justifiably be used—it held—to maintain the nutritional quality of a food, especially in countries where the supply of essential nutrients in the diet is marginal or deficient; thus antioxidants may be added to edible fats to preserve *beta*-carotene or pro-vitamin A. They may be used to enhance keeping quality or stability, so reducing wastage of food; examples are antioxidants, antimicrobial agents, inert gases, curing agents for meats, spices. They may be used to increase the appeal of a food to the consumer (as for example, colouring, emulsifying, flavouring, stabilising, thickening, bleaching and clarifying agents), thus preserving a constant colour in, say, butter and cheese—whose colour varies with the seasons—or in canned and pulped fruit, improving the texture of bakery products, imparting smoothness to ice cream, or giving uniform consistency to processed fats like margarine. They may be used in food processing, the present-day large-scale manufacture of foods of constant composition and quality needing stabilising, clarifying, oxidising and sequestering agents, acids, alkalis, buffer salts, and other processing materials.

Additives cannot—the Joint Committee held—justifiably be used to disguise faulty processing and handling techniques or to deceive the consumer. Strong flavouring substances should not, for example, be used to mask incipient putrefaction or conceal stale or inferior materials. Nor should they be used when they substantially reduce the nutritive value of the food, or when the desired effect can be obtained by good and economically feasible manufacturing practices.

Above all, additives should not be used when there is the slightest doubt about their safety. This means more than that the additives themselves should be safe. It means also that it must be shown that the additives do not produce substances in the food that are harmful. This they might do either when they are added to the food or afterwards, during processing, storage or preparation in the home. Or they might interact with each other to produce toxic substances, or do harm to essential nutrients in the food. Safety also includes consideration of the people who are going to consume the food, some of whom may, because of their physiological state or organic disease, be specially sensitive to the additive concerned—those suffering, for example, from parasitic diseases, malnutrition, or certain degenerative conditions. An important point to be remembered at all times is that while easily identifiable foods are readily avoided, food additives may not be.

Food additives are obviously here to stay. In the highly developed countries, the consumer demands highly attractive foods, uniform quality, and a wide choice at all seasons. Many foods are imported from distant countries to meet this demand, and need processing on arrival. Consequently the food additives used are many and varied. Even in the less developed coun-

tries, where processed foods in variety are not commonly found, there is an increasing use of food additives. Many of these countries are in tropical or subtropical areas where the preservation of food has its own special difficulties and the means of controlling additives are limited or non-existent; the increase in their use is thus a matter of concern.

The Safety of Food Additives

Clearly additives that are harmful to health are to be condemned, but on what basis are additives adjudged harmful to health? There is no doubt about the addition of adulterants, of mineral oil to cooking oil as in the Morocco incident, or of red lead to cheese. But what of legitimate additives apparently not harmful to man if taken in small quantities but about the long-term ingestion of which nothing is known? Some of these substances may be stored in the human body rather than broken down or excreted, and may after a certain threshold is reached begin to exert deleterious effects. Some may not be acutely but chronically toxic. Evidence of their safety is most often derived from study of the reactions of experimental animals to the administration of the food additives or of the processed food itself. A Joint FAO/WHO Expert Committee on Food Additives meeting in 1957 examined procedures for the testing of food additives to establish their safety for use. As additives (said the Joint Committee) may be taken for the greater part of a lifetime and produce reactions hitherto unsuspected, relatively much higher doses of the additives than human beings are likely to receive should be fed to the experimental animals for most or all of their lives. No single pattern of tests will do for all the many additives, hence the Committee could only make general recommendations, and even so it admitted that absolute proof of non-toxicity could not be established, since there may always be the occasional case of idiosyncrasy.

The best evidence—the Joint Committee admitted—for the safety of food additives is from human studies. Because there are difficulties in conducting these, reliance must be placed on other methods, among them animal experiments. The use of high dosage levels and the spread of the investigations over a number of different species make it reasonable to extrapolate the data to man. Even then, some margin of safety is desirable to allow for species differences in susceptibility, the numerical difference between the test animals and the human population exposed to the hazard, the greater variety of complicating disease processes in human beings, the difficulty of estimating human intake, and the possibility of synergistic action among the additives.

The Danger of Cancer

The length of the list of chemical agents causing cancer is increasing. The threshold of action of some of these agents is low, summation of effects probably occurs, and the effects, unlike those of many toxic agents, are also probably irreversible. In man 92 per cent of cancers occur in epithelial tissues, whereas these tissues take up only 17·5 per cent of body weight. As the epithelial tissues are those most subjected to external influences, it is not surprising that polluted air, inhaled dust, tobacco smoke, and other tissue irritants have been closely examined for carcinogenic substances. So too have substances ingested, among them, in recent years, food additives. Another Joint FAO/WHO Expert Committee on Food Additives that met in 1960 devoted its session to an evaluation of their carcinogenic hazards.

The Joint Committee found information on the toxicity or potential carcinogenicity of many food additives to be lacking. Where there is information, the design, execution, and interpretation of some of the experiments reported are inadequate, and corroborative evidence is missing. The Joint Committee therefore set out in detail the principles to which such tests should conform, the factors that must be taken into account—such as identity and purity of the material under test, the kind and number of the animals to be employed, the duration of the experiments, the diet to be given to the animals, periodic and post-mortem examinations, the dosage range in oral tests, control groups—and the criteria on which the interpretation of the results must be founded.

In principle, the Committee agreed, experimental studies cannot at present provide an absolute safe level for carcinogens in human food. Research and development in pharmacology and therapeutics are largely dependent upon the extrapolation of animal experimental studies to man. But it is safer to apply to man the results obtained from the administration of a pharmacologically active agent that rapidly produces a measurable reversible effect than those involving a process such as carcinogenesis which, as far as is known, is irreversible and may take many years to become apparent. Furthermore, the pharmacologically active agent is normally administered intermittently and is subject to some measure of control, so that unexpected deleterious effects are likely to be detected. A carcinogenic agent may be taken daily throughout a lifetime, with little likelihood that the relation between it and a cancer occurring long afterwards will be recognised. It is possible, since it has been shown that there is a relationship between dose and response in carcinogens, that dose levels exist that would not induce cancer (though carcinogenesis is such a complex phenomenon that even this cannot be taken for granted). Prudence, however, precludes the establishment of a safe dose at the present time.

If a safe dose of an additive cannot be laid down and experimental studies in animals show that it may be carcinogenic, what then should be done? No easy answer to this question can be given. Some of these additives or contaminants play an important part in the production of food or in the preservation of the community's health. DDT, for example, is widely used for spraying in malaria control campaigns and against many insect pests. As a method of controlling insects it is invaluable, and it has raised health standards in many parts of the world, but it is a food contaminant and has been shown to be a weak carcinogen in rats. The decision whether to use a carcinogen as a food additive or to prevent it from being a contaminant must there-

fore rest upon an assessment of the risks and the benefits it brings to the community and the individual consumer. There are various possible courses of action. A carcinogenic agent can be excluded from the list of food additives permitted. If it occurs in the general environment and contaminates food, tolerance levels can be fixed. If it is a secondary contaminant, specifications can be laid down that will ensure that it is kept to the lowest practicable level. If it is a pesticide, it may be banned on food crops, its use may be controlled, or the residue may be reduced to the level at which it is no longer detectable by a sufficiently sensitive method.

It is no easy task to make sure that food additives are free from harm. The first step is to disseminate information as widely as possible. In accordance with a recommendation of the Joint FAO/WHO Conference on Food Additives that met in 1955, FAO began in 1956 to issue a monthly bulletin entitled *Current Food Additives Legislation*, which presents abstracts of proposed new legislation and amendments to existing legislation. WHO and FAO have also begun the preparation of data sheets for a number of food additives. One on food colours has been completed. Others on such subjects as antimicrobials, antioxidants, and emulsifiers are being drawn up. By such means as these, FAO and WHO hope to keep governments constantly aware of the hazards of food additives and of the advances made in keeping additives safe for human consumption.

NOTES AND NEWS

W.H.O. Rushes Vaccine from Kasauli to Hong Kong

An emergency supply of 150,000 doses of cholera vaccine was flown by the WHO Regional Office in New Delhi to Hong Kong on August 21, 1961 in response to a demand from the Western Pacific Regional Office of WHO in Manila.

The request was received by the WHO office in Delhi on the morning of August 19, 1961 for 250,000 doses of vaccine. The Central Research Institute, Kasauli, readily cooperated to supply 150,000 doses immediately and the remainder in a week. This is the second time within a month that the Government of India's Central Research Institute at Kasauli has been called upon to meet an international emergency at WHO's request. The last consignment of 100,000 c.c. of cholera vaccine was sent to Kuching, Sarawak, on July 21/22.

World Feeds 55 Million More Mouths Every Year

The world's population is nearly the 3,000-million mark and increasing at a rate estimated as high as 55 million a year, United Nations statisticians reported on August 13.

Asia, which already holds 56 per cent of the globe's population is gaining between 22 and 33 million every year.

The world's death rate is declining and the experts estimated the world's average birth rate at 36 per 1,000 inhabitants and the death rate at 19 per 1,000.

There are more women than men in Europe, most of South America, the United States and the Soviet Union, the statisticians add. In Canada, Australia, New Zealand, Central America and most of Asia, however, males outnumber the females. The overall ratio is 49·9 men to 50·1 women.

While more male babies are born in the world than female, considerably more males die before their first birthday than do the females. Female mortality rates throughout are consistently lower than those for males.

Africans' birth and death rates are, probably, the highest in the world. Their birth rate was 47 per 1,000 and the death rate 28. Africa was not increasing its population as rapidly as South America or Oceania, but was ahead of North America, Asia, Europe and the Soviet Union.

The lowest birth rate in the world were in Europe where the average number per 1,000 inhabitants was 19. For the world, as a whole, the average birth rate was 36 per 1,000 and the death rate 19. The Soviet Union recorded the lowest death rate, 8, followed by Oceania 9, North America 9 and Europe 10.

Northern Rhodesia's native population has one of the four highest infant mortality rates in the world, but its European inhabitants have one of the lowest. More than 200 of every 1,000 non-white babies born in the British administered Protectorate die before their first birthday in a death rate equalled only in Uganda, Guinea and Sikkim. The infant mortality rate among Northern Rhodesia's European population is 16·9 per 1,000. Other low-mortality rates were recorded for Iceland (16·4); the Netherlands (16·5) and Sweden (16·6).

A newborn baby in Norway has the longest life expectancy of any in the world. Norwegian male babies expect to live an average of 71 years, while female babies have a probable life-span of 75 years. Males born in the Netherlands, and Sweden also had an expected span of 71 years. In these countries, however, and in England and Wales, female babies could expect to live to 74. The shortest expected lifetime for a modern baby was in Guinea where a 1955 survey showed a probable expectancy of 30·5 years for babies of either sex.

Other low spans were Haiti—32·7 years for either sex—and India—32·45 for males and 31·6 for females.

New Hearts for Old

The surgeon's dream, a bank of spare hearts, kidneys, of lungs from which to draw replacements for damaged, diseased, or worn-out organs, is perhaps one step nearer realisation as a result of a discovery made by scientists at the National Institute for Medical Research, London.

The scientists have been working on the problem of protecting tissue from damage during deep-freeze storage. They found that a simple chemical compound, dimethyl sulphoxide, was better than the substance now used (glycerol) in preventing damage in deep-frozen mouse bone marrow.

Since 1949, a wide variety of living cells and tissues, including human red-blood cells and eye tissue, have been protected with glycerol, banked at the institute at very low temperatures and subsequently thawed out and used successfully in transfusions and grafts. Successful longterm cold storage of whole organs, such os hearts, depends on no damage being done to the capillaries in those organs while they are frozen.

Dr. Andrey Smith, at the institute, has recently compared the effects of both glycerol and the new protective agent on the circulation of the blood in the capillaries of live animals. Using film techniques, she showed clearly that the new agent had less effect on stopping blood flow, and caused less wall damage to capillaries, than did glycerol. It may now be possible to store whole organs under deep-freeze satisfactorily, but the problem still remains of getting one creature to accept a replacement organ from another.

The results of experiments with mouse bone marrow are important because human bone marrow can now be deep-freeze banked even more satisfactorily, and should give even better results when used to treat, for example, side-effects arising from radiation treatment of cancer.

Results were obtained by suspending mouse bone marrow cells in both glycerol and solutions of the new agent, deep-freezing both, and subjecting the thawed-out material to microscopic examination and to tests in irradiated mice. Under the microscope it could be seen that many more cells in the new agent solution remained alive. When injected into the veins of mice given normally fatal doses of radiation, marrow cells protected with the new agent enabled a higher proportion of mice to live to a ripe old age.

Vaccine Against Common Cold

A vaccine against the common cold was now a possibility following the discovery by British scientists of a way to detect certain common cold viruses in a test tube.

The British Medical Research Council announcing this in its annual report spoke of a "break-through" in research after 12 years work at the Council's Common Cold Research Laboratory at Salisbury.

It was discovered that, with modification of the technique of tissue culture, viruses of the common cold could be grown consistently, the report said.

Cigarette smoking and air pollution were two important factors in the cause of bronchitis, the British Medical Research Council report stated.

UN to Discuss Population Growth

Denmark and Sweden on August 3 faced the United Nations General Assembly with the explosive question of debating birth control to curb the world's population explosion and improve living standards.

Without using the world's birth control in a three-page explanatory memorandum, the two Scandinavian countries proposed an agenda item for the regular session of the Assembly opening on September 19. It is styled "Population Growth and Economic Development".

The memorandum noted that some UN conferences had discussed the danger of a rapidly expanding population to the world's economic health, and asked for more UN efforts to get direct action.

Too Much Rice Shortens Life Span

Excessive consumption of rice shortens your life span, says a Japanese scientist. This indictment of the staple food of more than a billion Asians is to be submitted to the current 10th Pacific Science Congress at Honolulu by Dr. Kondo of Tohoku University. An unbalanced diet of too much rice causes premature senility and early death, his report concludes.

The professor said that he reached his conclusion after studying the eating habits of 700 Japanese villages over the past 25 years.

Three Top U.S. Antibiotic Firms Indicted

A Federal Grand Jury in New York has returned indictments against three of the biggest U.S. manufacturers of antibiotics and their chief executives on anti-trust charges, Mr. Robert Kennedy, the Attorney General, announced recently.

The Attorney-General said the indictments charged the firms and the executives with maintaining unreasonably high and non-competitive prices and with monopolising the production and distribution of certain drugs since 1953.

The Justice Department said that the companies were responsible for about 70 per cent of all business in the U.S.A. in three antibiotics—aureomycin, terramycin and tetracycline. These are sold by the firms under different trade names.

Bronfman Prizes for Public Health

Establishment of the annual Bronfman Prizes for Public Health Achievement, a new series of major awards to honour "outstanding current creative work leading directly to improve health for large numbers of people," was announced recently by the American Public Health Association. The prizes have been established with a grant from the Samuel Bronfman Foundation, Inc.

From one to three prizes will be awarded annually, depending on availability of suitable candidates. Each prize will consist of a $5,000 cash award and a commemorative symbol, now being devised. First awards will be announced and presented during the Association's 89th annual meeting in Detroit November 13-17.

The Bronfman Prizes will be awarded for work of particular effectiveness in applying newer scientific knowledge to community health rather than for achievements in basic or laboratory research.

The intention of the Samuel Bronfman Foundation to become active in the field of public health was announced by its president, Edgar M. Bronfman, on March 1st of this year during the "Life in Other Worlds" Symposium which marked the Foundation's tenth anniversary.

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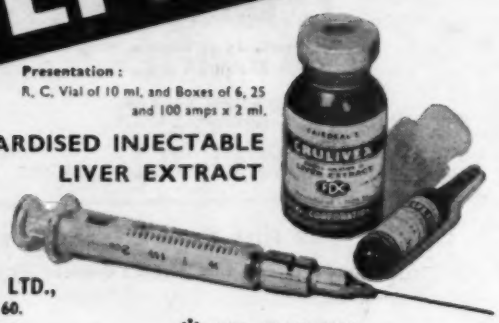

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International Seminar on Arteriosclerosis

Papers are invited for the above Seminar which will cover all aspects of arteriosclerosis. Special Sessions will be devoted to the following subjects :

1. Cardiovascular Arteriosclerosis, 2. Neurological Arteriosclerosis, 3. Peripheral Vascular Arteriosclerosis, 4. Experimental Arteriosclerosis, 5. Panel Discussion on Arteriosclerosis, which will be of special interest to general physicians.

It may be possible to arrange for return air/first class rail fares for those whose papers are selected for presentation at the Seminar. In addition, they will stay in Bombay for the duration of the Seminar as guests of the Organising Committee. The last date for receiving summaries is December 1st 1961. They should be sent to Jt. Organising Secretaries, International Seminar on Arteriosclerosis, K. E. M. Hospital, Bombay 12.

Central Body for Health Schemes

Addressing a meeting of the heads of over a score of institutions including research organisations working under the control of the Health Ministry, The Union Health Minister, Mr. D. P. Karmarkar, said on August 10 that Government were considering a proposal for the establishment of a central institution to keep a close watch on the execution of health schemes and evaluate the progress with a view to furthering health activities in the country.

The meeting, the first of its kind, was called by the Health Minister for promoting greater co-ordination among these institutions for effective implementation of the Rs. 342 crore health programmes under the Third Five-Year Plan.

Representatives of international organisations such as W.H.O. and UNICEF and of the Technical Cooperation Mission (U.S.A.) which are extending assistance to various health schemes were also present.

The Health Minister stressed the importance of research and said that no health scheme could be divorced from research. The efforts of the varions research institutions in the country had to be augmented and no expenditure to be incurred on these institutions was too great, he added.

Referring to the problem of leprosy in particular, Mr. Karmarkar said that there was now a greater appreciation of the nature of this problem and with the achievements in the world of medicine, it appeared to be practicable to grapple with it. Leaving out the "intense sufferers to whom no cure is possible", if they were able to catch those who were in the early stages of the disease, he pointed out it was conceivable that in 15 to 20 years' time, leprosy could be controlled in India.

The Health Minister also urged medical institutions in the country to improve their system of records which was at present "the weakest link", so that it would be of considerable value in tackling health problems.

Emphasis on Humaneness in Sex Education

Presiding over a seminar organised by the Association for Moral and Social Hygiene in India at the Delhi School of Economics on "Sex Education and Students' Counselling", Dr. N. K. Sidhanta, Vice-Chancellor of Delhi University, said on 7-8-61 that sex education of the youth should be humane rather than scientific. According to him the very purpose of sex education would be defeated if it only related to the biological aspect. The education should seek to develop for the youth a healthy attitude towards sex.

He said, "sex relationship originates in romance." It should be remembered that creative arts like poetry, painting and music had their source in romance.

Dr. Sidhanta regretted that there had been a shift of emphasis from emotions to body in sex relationship, as depicted in pictures and books lately. Referring to criticism that pictures corrupted the youth, he said there was nothing wrong with what the pictures depicted. The defect, he said, lay in the mode of presentation. He said that cheap books and pictures sought to tickle one's emotions by presenting love scenes in a suggestive manner.

Mr. Samuel Matthai, Secretary of the University Grants Commission, said that a healthy and happy life of the parents and teachers was the best sex education for the youth.

The children were constantly watching their elders, he said. The way the latter lived was bound to influence them. The attitude towards sex was also influenced by the values a society respected he added.

Eye Bank in Delhi

The Delhi Administration has under consideration a proposal for opening an eye bank in Delhi. Dr. D. P. Karmarkar, Health Minister, who gave this information in the Lok Sabha on August 21, said that there were altogether seven eye banks in the country one in Orissa, three in Madras and one each in Assam, Rajasthan and Uttar Pradesh.

Drug Testing Laboratory

The State Advisory Board of Drugs Control and Prevention of Spurious Drugs at its meeting held in Bombay on 12-8-61 decided to recommend to the Government of India the establishment of a regional testing and research pharmaceutical laboratory in Maharashtra for the benefit of small-scale and medium-scale manufacturers who did not have adequate facilities at present to test and standardise their products. The Board thought that as Bombay handled a large number of drugs for import and export purposes, it was necessary to have such a facility in this State.

The Board also considered the report of its sub-committee which went into the question of wide variations of prices of essential drugs. It endorsed most of the observations made by the sub-committee, which held the view that nowhere in Bombay City were drugs sold at prices more than those authorised by the manufacturers. The sub-committee had also opined that there was very little variation—only two to four per cent —in the prices of drugs in Bombay. The Board endorsed the feeling of the sub-committee that retailers might be advised of the necessity of fixing fair and reasonable prices of essential drugs as well as medicines which were in great demand.

Incidence of Blindness can be Heavily Reduced

That ninety-five per cent of the blind persons acquired blindness after birth, and such blindness is preventible was the finding of a survey of blindness in the city of Lucknow undertaken recently by investigators of the J. K. Institute of Sociology and Human Relations, Lucknow University, under the supervision and guidance of Dr. Saiyid Zafar Hasan and sponsored by the Department of Social Welfare, U. P. Government.

The investigation has revealed certain striking social facts. For instance, it was found by the team that incidence of blindness for every 1000 population in Lucknow was 6·65 as compared with only 1·73 for the population of the city of Bombay.

The investigators were of opinion that obviously the effects of sun-glare and dust-storm and inclement weather conditions in Northern India are largely responsible for heavier incidence in Lucknow.

At the instance of the Department of Social Welfare, Uttar Pradesh, another survey was carried out by the Institute in Gorakhpur town to find out the present condition of the blind persons and the social, economic, emotional and psychological problems faced by them.

Scientific Research into Alcoholism Planned

Scientific research and statistical studies of the "economic and social implications of alcoholism and prohibition" are to be conducted by the Government of Maharashtra. Adequate machinery is to be set up by the Government to "collect statistics about the incidence of drunkenness and the reasons for drunkenness," with a view to intensifying prohibition propaganda. A Government source stated that the research unit would be asked to suggest ways and means for plugging loopholes in the prohibition law and to make illicit distillation as unremunerative as possible.

Concessions to Medical Students

Maharashtra's Minister for Public Health, Mr. Homi J. H. Taleyarkhan, said at question time in the State Legislative Assembly on August 10, 1961, that ten per cent, full freeships and 15 per cent partial freeships were allowed for students in medical colleges who undertook to serve the Government after graduation.

The Minister, who was replying to a question said that it was not true that the concession was available only to such students as undertook to serve the department in the rural areas.

"It may be anywhere the Government may choose to appoint them, including urban areas, though it is true that the likelihood is more of such doctors being sent to rural areas where their need is the greatest," he added.

Mass X-ray of Students

A new scheme for simultaneous mass miniature x-ray and health examination of college students started on 21-8-61 in the premises of the University Science College, Calcutta. The Vice-Chancellor inspected the examination centre on 23-8-61. Arrangements have been made to bring students from colleges to the Science College for examination.

There are about 75,000 men and 10,000 women students in colleges in an around Calcutta. The newly admitted students in colleges number about 30,000 men and 5,000 women. With the existing staff at its disposal, the University's Board of Health is expected to examine 12,000 students a year.

Examination will be conducted from 1 P.M. to 4 P.M. Buses with 30 or 40 students will run every 40 minutes from 12-30 P.M. from colleges to the examination centre.

Nilratan Sircar Birth Centenary

The birth centenary of Dr. Nilratan Sircar falls on October 1 next.

For the purpose of celebrating the same in a befitting manner a committee has been formed with the West Bengal Chief Minister, Dr. B. C. Roy, as President. The committee has drawn up a twofold programme. It includes creation of a Nilratan Sircar Memorial Trust Fund for awarding stipends to meritorious and deserving students of higher science, medical and technological courses and for helping research work in medical and scientific spheres. The Trust Fund Society has already been registered.

The other part of the celebration programme will commence on October 1 next with the inauguration of a centenary celebration week, most probably by Dr. S. Radhakrishnan, Vice-President of India. The inaugural function will be followed by a series of medical and scientific symposia in which many noted scientists and members of the medical profession are expected to participate.

The committee has also decided to make a number of publications on the occasion which, among other things, will include an illustrated brochure on Dr. Nilratan Sircar's life and activities, a commemoration volume, collecting of writings and addresses of Dr. Sircar and a biography in Bengali. The office of the committee has been located at 93/1, Acharya Prafulla Chandra Road, Calcutta 9.

Two Weeks' Refresher Course on Tuberculosis

From November 20th to December 2nd, 1961 a refresher course on Tuberculosis will be held under the auspices of the Bengal Tuberculosis Association in Calcutta for registered medical practitioners. Preference will be given to mofussil doctors. Tution free. Further information from the Hony. General Secretary, Bengal Tuberculosis Association, P-21, Scheme 49, C.I.T. Road (near Park Circus), Calcutta 14.

New Deputy Director General of Health Services New Delhi

Dr. S. C. Seal, M.B.B.S., D.P.H., PH.D., F.N.I., F.A.P.H.A. (HON.), late Professor of Epidemiology, All India Institute of Hygiene and Public Health, Calcutta, has been temporarily appointed as Deputy Director General of Health Services, New Delhi in addition to his duties as Officer on Special Duty (Morbidity Survey).

Dr. Seal has been a collaborator and a referee of this journal for the last 10 years. He was also a member of the Journal Committee for some time.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

Use of Capyna Tablets and Other Rudanti Preparations as Anti-tubercular Drugs

SIR,—An article captioned 'Brain Trust' has appeared in the *Bombay Hospital Journal*, Bombay (Vol. 3, No. 2, April 3, p. 84, 1961) regarding the use of Capyna tablets and other Rudanti preparations in the treatment of tuberculous lesions. An extract of the article* is appended.

It may be seen from this article that the drug Rudanti has been tried on certain cases at the T. B. Department of the J. J. Group of Hospitals. The drug, instead of indicating any improvement is stated to have shown deterioration in the lung lesions and spread of other complications. The drug has also been marked to be of no antitubercular effect. On the other hand, the routine anti-tubercular drugs when tried on the same patients are stated to have shown excellent improvement in them.

In the circumstances, this Directorate suggest that the article in question may please be given a wide publicity in respect of the effects of the Rudanti preparations, and may be brought to the notice of all your readers. I am etc.,

S. K. BORKAR
Drugs Controller (India)

New Delhi 1.

EXTRACT OF THE ARTICLE

* "As far as Pulmonary Tuberculosis is concerned, we have tried Rudanti on 25 cases for three months at T. B. Department, J. J. Group of Hospitals . . . . . one month as in-patient and two months as out-patient. Most cases showed deterioration of the lung lesions and other complications such as spontaneous pneumothorax and haemoptysis. Sputum failed to convert in most of the cases. Moreover the Lucknow Research and other laboratories have reported that Rudanti has no anti-tubercular effect at any stage. Under the circumstances, we do not advocate the use of Capyna or any other preparation of Rudanti as the very patients under trial, showed excellent improvement when put on the routine anti-tubercular drugs".

An Interesting Case of Disseminated Tuberculosis

SIR,—In haematogenous spread of tuberculosis, it is not uncommon to detect evidence of tuberculosis in the lungs, lymph glands, abdomen and in the meninges, particularly in children. It is this clinical syndrome produced in the wake of tuberculous infection, to which I would like to focus the attention of general practitioners. Because of the anaemia and hepatosplenomegaly, other possible conditions like malaria, kala-azar, haemolytic anaemia, leukaemia, etc., come to the mind of the practitioner when the differential diagnosis is being considered. But one should at the same time consider the possibility of disseminated tuberculosis in such cases. The physical findings and laboratory data of the following case illustrate how careful one has to be to avoid errors in diagnosis. It is also interesting to note that the blood picture of the case reveals a leukaemoid reaction, which may also occur, though rarely, in tuberculous infection.

CASE REPORT

A. K., 8 months, admitted in May 1960, remained in the hospital for 9 months.

Complaints—Abdominal enlargement—duration four months. Fever and cough, pallor, and irritability——duration two months.

Physical examination—The child was marasmic, pale and looked anaemic. No significant glandular enlargement was found anywhere. Liver and spleen were enlarged 2½ fingers' breadth and about 5 fingers' breadth respectively below the costal margin. No ascites and enlarged glands could be palpated in the abdomen.

Blood examination—On 4-5-60—R.B.C. 3·24 million/c.mm.; Hb. 55 per cent; W.B.C. 73,000/c.mm. with polymorphs 59·6 per cent, monocytes, 2·4 per cent, lymphocytes 37·6 per cent and eosinophils 0·4 per cent. No M.P. found. Myelocytes present, a few only.

On 23-5-60—R.B.C. 4·00 million/c.mm.; W.B.C. 54,400/c.mm. with polymorphs 36·8 per cent, monocytes 2·4 per cent, lymphocytes 60·4 per cent and eosinophils 0·4 per cent. Normoblasts present, a few. No M.P. detected.

Tuberculin test—Positive in 1 :10,000 dilution.

X-ray examination of chest—Areas of patchy consolidation were seen in the left infraclavicular region and also on the right side. Hilar adenitis present.

X-ray examination of long bones and skull—N.A.D.

Aldehyde test—Negative.

This child was treated in the Hospital for Children, Patna Medical College, for a period of 9 months and was discharged in a greatly improved condition. He is still being followed up along with other cases of this group, for assessment of the ultimate result of specific treatment for tuberculous infection, combined with treatment on general lines.

In conclusion, it is emphasised that in any case of moderate or severe anaemia with fever and hepatosplenomegaly in a child, routine investigations must include x-ray examination of the chest, tuberculin test, E.S.R. and a careful history about contact (if any) with an open case of tuberculosis. Of course, it has to be emphasised also at this stage that other conditions like kala-azar, leukaemia, haemolytic anaemia, Banti's syndrome, etc., have to be excluded before a long term specific treatment for tuberculous infection is recommended in such a case. I am etc.,

LALA SURAJNANDAN PRASAD

Patna Medical College Hospital,
Patna.

A Sporadic Case of Poliomyelitis of Rare Type

SIR,—A sporadic case of acute anterior poliomyelitis of rare type with transitory pronounced sensory changes, coupled with motor paralysis, simulating acute infective polyneuritis is presented. This is the first case of poliomyelitis I have observed within the territory of North East Frontier Agency.

R. K., male, aged 3 years, had a minor episode of febrile illness for two days, followed by a brief apyrexial interval of one day. This was succeeded by another febrile episode associated with vague intermittent sharp pains in knee joints and thighs, headache, malaise, restlessness and anorexia. This low grade fever continued for two days and abated followed by rapid flaccid paralysis of both lower extremities.

On examination during the first minor illness, no abnormality except coryza and mild bronchial catarrh was detected. During the second febrile illness of two days, clinical examination revealed weakness of muscles of both the lower limbs, left quadriceps being mostly affected. The muscles were hypotonic, though co-ordination and nutrition of the affected muscles were normal. Superficial pain and pressure pain sensibility were absent in both legs upto the thighs. Over the same area tactile and thermal sensibility were much diminished. Of the deep reflexes knee jerks and ankle jerks were absent while biceps, triceps and supinator jerks were diminished on both sides. Superficial abdominal and epigastric reflexes were absent. Plantar reflex was flexor on both sides. Visceral reflexes were unaffected. Motor and sensory power of upper extremities, cranial nerves, and higher intellectual functions were normal.

After two days, complete flaccid paralysis supervened in the muscles of both lower extremities. But sensory changes, as noted above over the lower extremities completely disappeared giving place to normal sensory function over the area. The paralysis obviously was of lower motor neurone type with loss of deep reflexes, plantar response remaining flexor and visceral reflexes being unaffected. No other neurological abnormalities apart from what has been described were noted.

Pyrexia, pain in the limbs, succeeded by pronounced sensory changes in lower limbs, blunting of pain and thermal sensibility coupled with flaccid lower motor neurone paralysis strongly suggest acute infective polyneuritis. Sensory changes even transitory, are extremely rare in poliomyelitis and may be accounted for by transitory involvement of spinothalamic tract, contiguous to ventral horns. A study of cerebrospinal fluid by lumbar puncture would have differentiated the above two conditions.

Khonsa
Tirap Frontier Division
N.E.F. Agency

S. BHATTACHARJEE,
M.B.B.S.

B.M.B.S. at par with M.B.B.S. in U.P.

SIR,—The Government of Uttar Pradesh is reported to be short of about 250 medical officers in P.M.S. II and with a view to meet this acute shortage it is bent upon granting recognition of B.M.B.S. degree of Ancient (Ayurvedic) Medicine at par with M.B.B.S. degree of any university. Not to say the least as how unfair, legally and ethically it would be, it is beyond our comprehension as to how about such 8 odd persons at present holding the B.M.B.S. degree would fill the vacuum?

Before muddling Modern Medicine with the Ancient and bringing both types of graduates on one common register of the State, the Government should not have lost sight of the fact that to revive our ancient heritage and learning of Ayurveda, it would be suicidal to cloak graduates of Ayurveda under the garb of Modern (Scientific) Medicine, and thus destroy the very purpose of teaching and reviving Ayurveda and its glory. And at the same time, it would lower the prestige of U.P. State Medical Register in the eyes of world, when some of the names borne on that Register are *not recognised* and *registered* by the All India Register under print. So, obviously such a move is detrimental to the interest of all, ayurvedists, allopaths, and the State.

To improve matters in State Medical Service, I venture to submit herewith some suggestions, which I have duly submitted to the State Authorities for consideration, and humbly request you to very kindly give them full publicity so that these may be judged by all concerned and improved upon by those who are better versed in the subject.

My suggestions to improve the state of affairs in U.P. Medical Service are :

1. All medical officers with registrable qualifications, whether licentiate or graduate, serving in subsidiary, district board, municipal board, mills, or any other charitable dispensary or hospital, must *en masse* be absorbed in P.M.S. irrespective of age, and P.S.M.S. be abolished forthwith.

2. All Registered Medical Practitioners, under I.M.C. Act, be made eligible to P.M.S., with age restrictions relaxed as need be for the time being.

3. A scale of minimal basic pay be introduced in the State for all medical dispensaries, hospitals and institutions, owned or aided by the Government or recognised by the Government under management of private bodies or trusts.

4. Preferably P.M.S. I and II be amalgamated and the whole cadre be called P.M.S. In case, it is essential to have two grades, promotions from Grade II to P.M.S. I ought to be governed either only by time-scale or by some sort of efficiency examinations, irrespective of the incumbents initial qualification at the time of recruitment. If it is based solely on length of service, licentiate officers may be promoted say after 2-4 years as compared with their counterpart graduates (in consideration of their initial higher academic attainments).

5. Rural dispensaries/hospitals must not be placed under block officers or under any non-medical administrative control.

6. The Administrative Head at District level for Medical and Health Services be one, i.e., the posts of Civil Surgeon and District Medical Officers of Health be reduced to one, like what has been done at the State level.

7. No separate Cadre of Medical Officers exclusively for rural service be opened. All Medical Officers of P.M.S. whether Post Graduate, Graduate or a Licentiate, be eligible for posting to rural areas like non-family station posting of Army Medical Officers. A strict roster for the purpose ought to be maintained.

8. The posting to rural area be limited to a certain number of years. On voluntary extension of the tenure or on reposting on one's own request should entitle one

to the privilege of reckoning such extra service as double, i.e., if a person at his/her own request puts in extra 2 years, that ought to count as 4 years for promotion and pension.

9. During service in rural area some compensatory allowance for keeping double establishment and children education be made. And in case some one so asks, facility of residence at the District Headquarters, by alloting accommodation, be given just as it would be given to a State servant serving at Headquarters.

10. All facilities so provided should be given wide publicity in the press, and co-operation of Indian Medical Association and that of All India Licentiates Medical Association be sought, in recruitment particularly.

11. To further alleviate shortage, the paid staff particularly at urban dispensaries/hospitals (not barring rural) be reduced to bare skeleton; and part-time honorary workers, with honorarium, responsibility and respect commensurate with the job be encouraged and employed.

12. The barriers of provincialism be crossed, and the P.M.S. be opened to R.M.P.s of any State of the motherland. It is well known that a sister state, Bengal, has surplus of medical personnel and under able Directorate and Medical Ministry a cadre of Reserve for supply to States with shortage has been established therein. It would really be an irony of fate if in one part of a country qualified personnel remain unemployed and at the same time in another part, half qualified or unqualified men are let loose on the public to practise modern medicine over which they have no claim and in which they are not practically trained or qualified under I.M.C. Act.

13. Higher initial pay for higher academic qualification or superior experience is likely to attract plenty and purposeful enrolment, provided of course that future prospects as to promotion, etc., are also ensured on enquiry. I am, etc.,

Muzaffarnagar — N. TYAGI
Member, U. P. Medical Council

REVIEWS

Clinical Vector Cardiography and Electrocardiography—By Edward Massie, A.B., M.D., F.A.C.P., F.A.C.C. and Thomas J. Walshe, B.S., M.D., F.A.C.C.; Year Book Publishers Inc., 200, East Illinois Street, Chicago; 10½"×8", pp. xiv+519; $27.50.

This book is divided into several parts. Part 1 deals with the normal electrocardiogram and vector cardiogram. Part 2 deals with the abnormal electrocardiogram and vector cardiogram; Part 3 with cardiac arrhythmias; Part 4 with other conditions affecting the electrocardiogram; and part 5 with illustrative vector cardiograms and electrocardiograms.

This book at the outset deals with the basic concepts of vector cardiography in a lucid manner.

The title implies that this work is not merely on vector cardiography but also on electrocardiography. Correlation of vector cardiography and electrocardiography has been done with actual tracings. The table of the relation of the site of myocardial infarction with vector interpretations is well illustrative for electrocardiologists. Of the many well written chapters, the chapter on right ventricular hypertrophy and its relation with vector cardiographic findings and the chapter on combined ventricular hypertrophy in children have been nicely dealt with. It has been stated in Fig. 144 that despite the deep S-wave in lead v1 and tall R-wave in lead v6, the diagnosis of left ventricular hypertrophy cannot be made because the increased QRS voltage are not necessarily related with the thickness of the left ventricular wall but may reflect aberrant spread of activation through the left ventricle. We have also observed such phenomenon in cases of pure mitral stenosis where valvotomy was performed in spite of such high QRS voltage. In these cases there was no evidence of mitral incompetence or aortic stenosis. However the QRS voltage diminished after valvotomy.

In chapter 21 which deals with ventricular aneurism, it has been stated that some patients with ventricular aneurism do not display persistent ST segment elevations. We had the opportunity to study one case with steering wheel injury of the chest and myocardial infarction who had all evidences of ventricular aneurism other than the electrocardiographic. The explanation of ST elevation of Grishman as stated in this book in this condition is worth noting.

The volume is recommended to those who work with vector cardiogram and to other cardiologists for the excellent interpretations. Postgraduate students in cardiology will be immensely benefited from this book.

DEB P. BASU

Light Coagulation—By Gerd Meyer-Schwickerath, M.D.; Translated by Stephen M. Drance, M.B., F.R.C.S. (ENG.); 1960. The C. V. Mosby Co., St. Louis, U.S.A.; 9¼"×6½", pp. 114; $9.00.

Dr. Meyer-Schwickerath has opened a new chapter on ocular therapy by his technique of treatment of some ocular conditions by light coagulation. He should be congratulated for perfecting a complicated and very costly optical apparatus which is now available and easy to handle. It has passed the stage of experiments and he is now the master of the new technique. His new method of therapy has stood the test of time and some of his results, particularly treatment of macular holes and peripheral retinal tears without much retinal detachment are astounding. Light coagulation has saved these patients from undergoing operation and a gruesome postoperative period. This monograph deals with the historical and experimental background of radiation damage to the retina, description and instructions of how to use a Zeiss Light Coagulator, and indication and contraindication for light coagulation. His clinical results are well assayed and it can now be safely said that an ophthalmic clinic dealing with retinal detachment should have a light coagulator.

M. SENGUPTA

Introduction to Health Statistics—By Satya Swaroop, M.A., PH.D., M.P.H., F.N.I.; 1960, E. & S. Livingstone Ltd., Edinburgh and London; 9½"×6½", pp. 343; 40s. net, registered postage 2s. 11d.

Collection and compilation of vital events like birth, death and sickness (the notifiable ones) are included among the primary functions of health administration. Of late this particular system of work has assumed a greater importance due to the expansion of health services, particularly in the developing countries, and also due to the change in the present outlook of medicine and medical practice in the world.

Modern medicine takes up the total man in its total study, and the modern physician in order to render true service to his patient has to consider various factors—biological, social, environmental, etc.—in the study of disease phenomena. The science of statistics forms an essential tool like other sciences, viz., anatomy, physiology, bacteriology, etc., in the study of medicine.

In the changing phase of the concept of medicine, Dr. Swaroop's introduction to health statistics is welcome to modern medical students, practitioners and administrators, though the author, Chief Statistician, Health Statistical Methodology, World Health Organisation, has prescribed the book mainly for the health administrators.

The subject has been presented under three main sections: (i) Laying the foundations, (ii) Health statistics administration and (iii) Analysis and presentation of data with various subsections under each.

From the utility point of view it is noticed that the author has put up enough stress and dilated at length to make the subject understandable and popular to the medical and health administrators who are not generally conversant with the intricate mathematical aspects of statistics. Thus the book has its preaching value. But it would have been more useful and handy had it contained more examples by working out the elementary statistical principles, for want of which it is a bit difficult to recommend it as a text book to the beginners in the field of health statistics. As a supplementary study, it is hoped that the book would really turn out to be very useful to those interested in health statistics, viz., the health administrators, epidemiologists, physicians in charge of health centres, etc.

A. L. SAHA

Key and Cornwell's Management of Fractures, Dislocations and Sprains—By H. Earle Cornwell and Fred. C. Reynolds; 7th edition, 1961, The C. V. Mosby Co., St. Louis, U.S.A.; 10"×7", pp. 1153, 1227 illustrations; $27.00

This well-known book on management of fractures, dislocations and sprains running into 7th edition shows the popularity it enjoys amongst surgeons, medical students, general practitioners and specialists.

Many chapters have been re-edited, particularly those on injuries of the spinal disc, hip prosthesia, maxillofacial injuries and intramedulllary nail.

Emphasis is laid, as it should be, on closed treatment of fractures than on operative treatment which has been and still is a rage with many surgeons. It does not mean that the legitimate indications of operative treatment of certain fractures have been neglected. On the contrary, it has been stressed as is shown by this statement, "all patients with fracture of hip, either intracapsular or extracapsular, who have walked prior to the fracture should have an adequate operative procedure performed if their general condition permit."

The advice of treating not only the affected part but the injured individual as a whole is sound. Selective and common injuries with their rational and modern methods of treatment form the basis in the different chapters.

There are 1127 excellent illustrations and the get-up is of a very high standard.

K. S. BOSE

Bulletin of the Medical Library Association, Vol. 49, No. 1, Part 2 (of 2 parts), January 1961; published by the National Library of Medicine, Index Mechanisation Project, Washington, D.C. 1961; 10"×7", pp. 96.

The great project in the planning and fashioning of the new *Index Medicus* has been possible with the collaboration of the talents of Mr. Eugene Garfield, Director of the Institute for Scientific Information in Philadelphia and of Robert L. Hayne. The experience of the former in the Welch Medical Library Indexing Project particularly in connection with his work on 'The Preparation of Printed Indexes by Automatic Punched-Card Equipment' was put to good use and contributed to the success of the venture.

John Shaw Billings undertook the first large-scale indexing of current medical journal literature and it goes to his credit to have brought out—in 1879—the first volume of the first work and to have used the title *Index Medicus,* the unique publication of the index-catalogue system of medical bibliography used for reference throughout the world.

The *Quarterly Cumulative Index Medicus* (QCIM) ceased to be a quarterly in 1950. During World War II, the small twenty-page weekly leaflet entitled the *Current List of Medical Literature* first appeared in 1941 and was much in demand since it claimed to be 'Current'.

Increasing pressure on the *Current List* helped to bring out a report to the National Library of Medicine Board of Regents in November 1957 on progress, problems and possibilities in indexing.

One cannot but be struck with the assets and resources of the National Library of Medicine.

There is the indexing experience of eighty uninterrupted years with varieties of procedures and products to its credit.

The Library had the largest collection of medical periodicals in the world to work with. Besides, the staff had an unusually broad working knowledge of foreign languages.

As regards photographic equipment, a 400-ft. roll of film representing some 135 three-column pages produced from about 21,000 cards, can be exposed in 1½ hours. It requires three full rolls of film to produce the average issue of the *Index Medicus* (450 pages).

It is evident therefore that the outlook is bright for the smooth and uninterrupted publications of the *Cummulated Index Medicus*, despite its huge size, "which is certain to run well over 4,000 pages and must appear in several volumes."

In the Bulletin under review, the development of a new system for publication of the *Index Medicus* has been described and the staff and personnel, the machinery, equipment and man-hours involved, the financial implications have all been appraised. It will present an interesting and instructive study for all who have anything to do with the production of such a huge publication of classified index involving world-wide facts and figures.

The NIM uses the Listomatic Camera to solve its composition problems for indexing purposes and adopts the latest techniques and devices which are at once the most complex and yet the most broadly integrated system of mechanisation of the present day.

K. K. SENGUPTA

The Basic and Clinical Research of the New Antibiotic, Kanamycin, Annals of the New York Academy of Sciences, Volume 76, Art. 2, September 30, 1958; Editor in Chief, Otto V. St. Whitelock; published by the Academy, New York; 9"×6", pp. 17-408; $5.00.

This volume is a monograph of the detailed results of both clinical and experimental studies on kanamycin. The investigations were carried out in the United States, Canada and Mexico, in association with the basic and scientific investigations in Japan since its discovery in 1958 by Hamao Umezawa and his colleagues; and the results were discussed in the Conference on the basic and clinical research of the new antibiotic held in July 1958 under the joint auspices and support of the Academy and the Bristol Laboratories, Inc., Syracuse.

This antibiotic has been discovered as a result of painstaking search amongst a large number of actinomycetes antibiotics for water soluble and basic antibiotics having no delayed toxicity. Obtained from *Streptomyces kanamyceticus*, it has a bactericidal action more on proliferating cells. It has a range of activity over gram-positive, gram-negative and acid-fast bacilli. Resistance to *S. aureus* and *E. coli* develops more slowly than in streptomycin and it has no antagonism with tetracycline and penicillin. It is distributed to the spinal fluid and bile and is excreted in 5 hours by glomerular filtration. Its toxicity on the kidneys is less than that for neomycin and it is non-toxic in 100 mg./kg. in dogs I.M. for nine months. Other toxic effects are drug fever and drug rashes.

It can be administered intramuscularly (1 to 2 g. daily), orally (8 to 12 g. daily), intraperitoneally, intrapleurally, topically, and as aerosol. In tuberculosis, it is effective against organisms resistant to streptomycin, INH or PAS.

This new antibiotic has immense possibilities for clinical usefulness. The monograph contains 37 different articles with an Introduction by C. H. Mann at the beginning and a Summary by Maxwell Finland at the end.

M. L. CHATTERJEE

OBITUARIES

Dr. U. Krishna Rau

We record with profound regret, the death of Dr. U. Krishna Rau, in the early hours of August 3, 1961. Dr. Rau was taken ill in the last week of March and since then had been confined to bed.

Dr. Udipi Krishna Rau was born on 10th September 1900, at Madras, had his education at the St. Paul's High School, the Madras Christian College and the Madras Medical College from which he graduated in Medicine in 1924.

Dr. Krishna Rau set up private practice in 1924 and soon became a successful doctor. His popularity in the Georgetown area was unique and enabled him to win the people's confidence at successive elections to the City Corporation of which he was a Councillor between 1930 and 1951. He was also the Mayor of the City in 1947-48. He joined the Congress Party in 1930 and was elected to the Legislative Assembly from the Harbour Constituency in the General Elections in 1952. Since then, he continued to be a member of the Assembly. After his election in 1952, Dr. Krishna Rau joined the Rajagopalacharia Ministry as Minister for Industries and Labour and held office till April 12, 1954, when the Cabinet resigned. He was Chairman of the Estimates Committee of the State Assembly from 1955-57.

After the General Elections in 1957, Dr. Krishna Rau who had been re-elected from the Harbour Constituency, was chosen Speaker of the Assembly in April that year. As the Presiding Officer of the House, he was popular with the members of all the parties.

DR. U. KRISHNA RAU

Dr. Krishna Rau was one of the oldest members of the Indian Medical Association and contributed to a great extent towards the advancement and improvement of the activities of the Association. He was the president of the Madras State Branch, I.M.A., in 1950-51 and 1951-52, the vice-president of the Central I.M.A. for a term and a representative of the Madras State Branch on the I.M.A. Working Committee for a number of years.

A sincere well-wisher of the Journal of the Indian Medical Association, Dr. Rau was a member of the Advisory Board of the Journal. He was also keen to help the Journal in all possible ways whenever asked for.

Dr. Rau was a keen Rotarian and member of the Cosmopolitan Club, the Gymkhana Club and the Madras

Cricket Club. He was connected with several social service organisations in the city. He was the chairman of the Madras State Branch of the Indian Red Cross and the St. John Ambulance Association. He was the Chief Organiser of the Bharat Sevak Samaj in Madras State. He was besides, associated with the University of Madras, its Syndicate, Senate and Academic Council.

Dr. Rau was one of the joint presidents of the Madras Branch of the Commonwealth Parliamentary Association and attended the General Council meeting of the Association held in Trinidad in December 1959, representing the Madras branch of the Association. During that time, he took the opportunity to visit the U.K., Canada, U.S.A. and Japan and study the parliamentary institutions of those countries.

In his youth Dr. Rau was a keen sportsman and a very good athlete. He was the chairman of the Madras Football Association, chairman of the Madras State Table Tennis Association and vice-president of the M.U.C.

He was joint-editor with his father, the late Dr. U. Rama Rau till the latter's demise in 1952, of the *Antiseptic* and *Health*. The mantle of editorship then worthily fell on Dr. Krishna Rau.

The Government of India issued a Gazette Extraordinary announcing "with the most profound regret" the death of Dr. Krishna Rau and placing on record his public services "for over 30 years". The Gazette stated, "Dr. Krishna Rau has played an important part in the public life of the State. His rich experience and versatile talents have been fruitfully employed in many spheres of activities. His wise counsels have played a significant part in shaping civic affairs of Madras City".

As a man, Dr. Rau was of a cheerful disposition and gentle and suave in his manners and had a smile for everybody. As a member of the medical profession and of the medical association he was connected with, he was ever active and always mindful of their interests.

In his death, the country has lost an unassuming and sincere worker and the Indian Medical Association one of its most valuable members.

Dr. Rau left bthind his aged mother, his wife, two sons and five daughters, besides numerous relatives and friends to bemoan his loss.

Dr. L. N. Goel

Dr. L. N. Goel was born at Chandausi in U.P. on September 4, 1900. He graduated in medicine from King George's Medical College, Lucknow, and started his career as an Assistant Surgeon in the Railways. He went to England for further postgraduate studies in 1935 where he successfully obtained membership of the Royal College of Physicians (M.R.C.P.) at Edinburgh and Diploma in Tropical Medicine and Hygiene (D.T.M. & H). from London.

In 1954, he became the Chief Medical Officer of the Northern Railway. He retired from the Indian Railways in 1957 and settled down at Calcutta and was intimately associated with Asharam Bhiwaniwalla Hospital as an honorary consultant. In 1960, he was appointed Chief Medical Officer, Hindusthan Steel Ltd., Calcutta.

DR. L. N. GOEL

Dr. Goel had reported a number of original observations. He was best known for his account of epidemic dropsy among employees of E. Indian Railway which is quoted in a number of text books on Tropical Diseases. He took keen interest in the activities of local and State branches of I.M.A., and was Chairman of the Reception Committee of the XV Uttar Pradesh Medical Conference held at Moradabad in 1950.

Recently Dr. Goel had an attack of subarachnoid haemorrhage and he breathed his last on July 1, 1961. He is survived by his wife, son and three married daughters. Dr. Goel was very conscientious, sincere, and devoted to his duties and always helped the cause of the poor. His untimely death is a great loss to the medical profession.

Dr. Nandlal B. Vani

Dr. Nandlal B. Vani was born at Nandurbar in 1892. He passed the matriculation examination in 1912, and became a teacher and then head master in the year 1914-1915 in the then A. V. School, Nandurbar. Next he went for further studies, and passed M.B.B.S. from the Grant Medical College in 1923. He worked on the staff of the Peoples Free Hospital, Bombay, for some time.

DR. NANDLAL B. VANI

Dr. Vani started private practice in Nandurbar in 1927, and continued it till his last illness. He took keen interest in professional matters and used to attend the annual All-India Medical Conferences. He was a founder member of the Nandurbar Branch, I.M.A. and remained its president from its inception. He expired after a long illness on June 12, 1961 leaving behind a big family, friends and well wishers to mourn his loss.

ERRATUM

September 1, 1961 issue, page 223, column 1, line 6: *In place of* C. B. PATEL, printed as the name of the second author, *please read* C. B. SETH. The error is regretted.—ED., *J. Indian M. A.*

SUPPLEMENT
Journal of the Indian Medical Association

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XIV GUJARAT, SAURASHTRA AND KUTCH TERRITORIAL MEDICAL CONFERENCE 1961, RAJKOT

Under the auspices of the Gujarat, Saurashtra and Kutch Territorial Branch of the Indian Medical Association the 14th Annual Conference of medical men of Gujarat State was held at Rajkot on May 6-7, 1961. About 200 delegates and visitors from all over the State and a few distinguished members of I.M.A. from Bombay attended the Conference.

The Territorial Council met on the May 5, 1961 under Chairmanship of Dr. A. B. Kothari. About 35 members from various constituent branches attended the Council meeting. The Council besides dealing with routine business adopted the Annual Report of the working of the Territorial Branch for the year 1960-'61, passed the audited accounts and adopted the Budget for the year 1961-'62. The Council also discussed amendments to Terr. Rules and Bye-laws and accepted the draft rules recommended by the Rules Re-casting Committee. The Council finally elected the office-bearers for the year 1961-'62.

The Conference was inaugurated in the morning of May 6, 1961, in a specially erected pandal in the spacious premises of Shri Vallabh Kanya Vidyalaya, Rajkot (Saurashtra) by Shri Maneklal C. Shah, Minister for Health, Industry and Civil Supplies, Gujarat State. Dr. A. P. Shukla a senior, leading member of I.M.A. presided over the Conference.

WELCOME ADDRESS

Dr. H. N. Dastur, Chairman, Reception Committee, accorded a hearty welcome to the guests and delegates and traced the history of Rajkot and its contribution to the political, cultural, educational and industrial progress in Saurashtra with special reference to the Father of our Nation Mahatma Gandhi, who had spent his childhood in Rajkot. In his speech he also referred to the medical facilities available in Rajkot paying tributes to the efforts of I.M.A. Branch Rajkot, in running a T.B. Clinic by branch-members, first of its kind in this part of the country. He also referred to a T.B. Hospital to be founded in Rajkot by the Rajkot Branch, I.M.A. for the benefit of T.B. patients in Gujarat State. Finally thanking the authorities of the Vallabh Kanya Vidyalaya for sparing their premises for the use of the Conference, Dr. Dastur requested the Health Minister Shri Maneklal Shah to inaugurate the Conference.

INAUGURAL ADDRESS

Shri Maneklal Shah while thanking the Reception Committee stated, that "Ours is an infant State and as such we have to work hard and progress in all directions. We have to keep pace with the fast developing science all over the world and therefore our immediate need is to establish medical research centres without which we cannot progress. Our second need is cheap and effective drugs for our suffering population and also to guard against spurious drugs which are sold so freely in our country today. We have also to concentrate on the preventive aspect of the diseases. In this respect much has been done towards eradication of malaria and small-pox but we have still to fight with the scourge of tuberculosis, leprosy, and diseases like elephantiasis and other helminthic diseases so rampant in our State. Finally, we have to maintain pace with food production vis-a-vis the increase in population and I am sure this Conference will give proper thought to my suggestions and evolve such schemes which will prove beneficial to our people both in urban and rural areas, and lastly he said that the medical and public health departments of the State will always co-operate with your Association in implementing schemes or suggestions which will benefit this newly born State of Gujarat."

PRESIDENTIAL ADDRESS

After the inauguration speech by the Health Minister, the outgoing President Dr. A. B. Kothari introduced the President elect Dr. A. P. Shukla to the House and installed him in the Presidential Chair.

Dr. Shukla, while occupying the Chair thanked the Chairman and members of the Reception Committee for organising the 14th Territorial Medical Conference at Rajkot and also the Branch-representatives present, for unanimously electing him as the President of the Gujarat State Branch, I.M.A. He said,

"We medical men, have a great responsibility to discharge towards our fellow beings. The almighty has made us the instruments to look after and serve the ailing humanity—his own creation. We must discharge this duty faithfully, diligently and courageously. In this welfare state of ours, there are greater and greater demands from the profession by way of taxes on drugs and establishments etc. and we are branded, *traders, shopkeepers, businessmen, manufacturers,* with all these demands good or bad, let us always pray to God to give us strength not only to cure our patients but to allay their fears, to ease their worries and last but not the least inspire hope and confidence in them to get well with kind words and humane treatment. In short let us treat our patients with the precision and the inspiration of an artist, because after all said and done practice of medicine is an art.

PAY SCALES AND SERVICE CONDITIONS OF MEDICAL MEN IN SERVICES

Question of pay scales and service conditions in our State is far from satisfactory. A righteous, honest medical man with skill and ability asked to serve under the condition that the state of Gujarat offers cannot be expected to do full justice to his assigned duties. I can only very humbly suggest that at least the scale offered to the "Judiciary", the Collectors and the Engineers can certainly be recommended to the members of the medical profession. This question has been discussed very thoroughly in the past and I will therefore not dilate on it further.

R. M. Ps.

There are so many R. M. Ps. in our state and I have no quarrel with them. They can practise anywhere they like but they should be cautioned and controlled before they administer or dispense the drugs like pethidine, morphia, novocain, irgapyrin, pitocin, penicillin, streptomycin and other sulpha and antibiotics, administration of which demand essentially the skill and knowledge of a student of medicine. At least they should stick to the branch of medicine they claim to have qualified in.

MEDICAL LICENTIATES

As a licentiate, I must admit that the licentiates are not still considered at par with other graduate colleagues. They are not considered as Medical Examiners in Life Insurance Corporation and they are still kept in the separate schedule in I.M.C. Register, inspite of the protests of the I.M.A. and the whole medical profession. The State Government is thinking of upgrading the G. F. A. M. with L. C. P. S. This will be a retrograde step on the part of the Government. In these days of higher living index, we bless the raising of the pay scale of all those serving in the Government but not at the cost of the other class. Licentiates in service are by now very senior and sincere servants of the State and to degrade or equalise them with a class which is quite junior and inexperienced will be an injustice to the licentiates.

This brings me to the controversy of G. F. A. M. students demanding the condensed course for M.B.B.S. It is time for the Government of the State to take stocks of situation: when these courses were started, I.M.A. had warned the then Bombay Government who were keen on promoting Ayurvedic practice in the then State of Bombay. May I ask in all earnestness and in all humility to the authorities concerned whether their ideal of establishing Ayurvedic practice had been realised. The students (both past and present) of the Faculty have denounced both from the platform and press that they did not want to continue to study in Ayurvedic course and that they wanted a condensed M.B.B.S. course. Will these demonstrations and strikes open the eyes and ears of the authorities and the Legislature? May I suggest very politely that these courses be closed down forthwith and no new admission be given at these institution and may I also request authorities of these institutions to upgrade them and give the students instructions in post-graduate courses in Ayurved.

MEDICAL EDUCATION

I must express my deep sense of gratitude to the Health Minister of Gujarat and Dr. M. J. Shah, the D.M.S. in particular for their untiring efforts to increase number of admissions at various medical colleges in the State. It is raised from 220 in 1959 to 280 in 1960 and in the third five year plan we will have one more medical college at Surat and I hope and pray that the State of Gujarat will not require many more medical colleges. Let me take this opportunity to thank the president and members of the Indian Medical Council for the bold and foresight decision of allowing more admissions in medical colleges where the admissions do not exceed 2000.

The problem of instruction in post-graduate courses in various specialities and research demands serious and urgent attention both of the medical profession and the Government of the State of Gujarat. In these days of Gagarin, the space traveller, is it too much to expect the development of specialities in chest, brain, and neuro surgery, research centre like the Haffkine Institute, a public health laboratory, an eye Bank and the rest, in the State of Gujarat? With the eminent professors at the various medical colleges and the illustrious consultants in the cities of Gujarat, I am confident that the State of Gujarat will not lag behind the progress of Medical Science of today. Let us also not forget to develop, the recent advances in radiation hazards and general acquaintance with them, must therefore, form an essential part of education of every medical student.

DECENTRALISATION AND PANCHAYAT

While accepting the principle of decentralisation at the Panchayats I cannot but sound a note of caution to the authorities as far as the technical aspect of the medical employee is concerned. The medical personnel must be left alone to prescribe the drugs and admit and treat the cases in the hospitals at their discretion and this part of administration should be controlled directly by the Government and not by the Panchayats. To give two illustrations:

(1) Certain patients require particular drugs and the doctor prescribes them: the Panchayat does not accept doctor's recommendation; the doctor is in a dilemma.

(2) Patient 'A' requires hospitalisation urgently and the patient 'B' is recommended for hospitalisation by authority in the Panchayat. The doctor thinks that the condition of 'A' is serious and that 'B' can be treated at his residence and therefore the doctor refuses the admission to 'B' with the result that he incurs displeasure of some body in the office.

Such are small illustrations which may cause confusion and dissatisfaction between the patient, public, the Panchayats and the medical men. To avoid this, as I have said before, let these powers of supervision and control be vested in the Health Ministry.

Let me also recommend from this platform the urgency of appointing at least 3 medical men in the N.E.S. Blocks. Today one medical man doing onerous duties in such one N.E. Block cannot do full justice to the duties.

We, medical licentiates, are grateful to the members of the Senate and Syndicate of the Gujarat University for recommending and approving the franchise to the medical licentiates in the Medical Faculty of the University. Gujarat University is trying hard to become one of the fast progressing Universities in India. However, may I request the Dean of the Medical Faculty of the Gujarat University to consider and recommend the Degree or Diploma in Public Health and Occupational or Industrial Medicine to the Senate of the University. I also request the Government of Gujarat to consider the question of establishing:—(i) College for Dentistry; (ii) College for Nursing; (iii) College for General Practitioners.

The former two Institutions will help our youngsters to further their courses in Dentistry and Nursing and stop the inconvenience to them to go out of our State for furtherance of their studies. The College for General Practitioners will enrich and refresh the general practitioners with recent advances in medical science. Their wide and wise experience supplemented with knowledge of recent advances in medical science will greatly benefit the masses of Gujarat.

E. S. I. SCHEME

E. S. I. Scheme is being implemented in the State shortly to look after the health of the workers, off the work. The importance of the Industrial Medical Officer to look after the worker during the work in the industrial concerns is lost sight of by the industrialists, the labour leaders and the State and Central Governments. It is both necessary and economical in the larger interest of the industrial concerns to make sure that the environments therein are congenial to its workers on duty and the hazards arising out of their occupation are kept to the minimum. In the newly formed State of Gujarat, when small and big industries are coming up round

DR. H. N. DASTOOR
CHAIRMAN OF THE RECEPTION COMMITTEE

DR. A. P. SHUKLA
THE PRESIDENT OF THE CONFERENCE

DR. T. M. SHAH
THE ORGANISING SECRETARY OF THE CONFERENCE

DR. R. L. SHAH
PRESIDENT OF THE RAJKOT BRANCH

about the bigger cities of the state, there is greater need of establishment of an occupational health service. Such an occupational health service can offer the following preventive facilities :—

(a) Immediate surgical or/and medical treatment to the employees in close proximity to the industrial concern ensuring them by marked saving of loss of work load of the employee.

(b) Investigation of health hazards and study of environmental hygiene.

(c) Correction of heat and ventilation of the places of work to make them more comfortable for the workers.

(d) Advice on domestic problems which have bearing on Industrial Health.

(e) Organisation of physiotherapy and rehabilitation centres for patients who had suffered injuries while on duty.

(f) Organisation of centres for periodical medical check-ups.

(g) Safety in Industry.

Such a scheme if implemented will be supplementary to the E.S.I. Scheme and I am sure the industrial concerns and the labour will derive much advantage with the realisation of the ultimate objective of efficient management and maximum output of production for the nation. To achieve all these I respectfully submit that the Factory Medical Service, or Occupational Health Service be established in all the industrial concerns in the State of Gujarat. The labour leaders and the leading industrialists will, I am sure, give this question the importance it deserves, in their interest.

IMPLEMENTATION OF E.S.I. SCHEME IN THE STATE OF GUJARAT

I.M.A. has always advocated the panel system for implementation of such a scheme not because it is in the interest of the medical men in particular but because the panel system has proved the most successful system all over the world. We can, certainly, learn by the wisdom of other countries. By forcing anybody, least a worker to go to a particular dispensary when and where the medical personnel is unknown to him (and perhaps likely to be transferred more often), it disregards the element of his faith and confidence in the medical man who treats him. May I ask very humbly, why has the institution of family physician come to stay all over the world? It is this family physician who commands faith and confidence not only of the head of the family but of every member of the family. It is this gentleman who inspires confidence of young ladies and mothers, youngmen and their fathers, even that of the children in the family. It is this gentleman that serves the family in events of distress and or happiness. If the panel system does not survive, the institution of family physician will have to struggle hard to survive and being the fittest, it is sure to survive. E.S.I. Scheme is being implemented and if the full time personnel is coming, may I request the authorities concerned from this platform to see that the medical men employed in the service get adequate emoluments after consideration of their experience and years of practice. Need I add that proper representation of I.M.A. on all the committees of the E.S.I. Scheme implementation in the State of Gujarat will earn more co-operation and confidence of the profession? May I once again impress upon the authorities of the E.S.I. Scheme to give a trial to the panel system? We know as a matter of fact that there is shortage of medical men in the State and by employing the full time paid personnel we will create still more death in the personnel that already exists and caters to the rural areas, I may submit here that doctor-patient ratio in rural areas of Gujarat is 1 :30,000 and in uban areas it is 1 :1,500.

Ours is a new State and perhaps a deficit one. However, prophylactic treatment, medical aid, housing in healthy surrounding, pure drinking water, disposal of sewage, school health service, imparting health education, proper sanitation in both urban and rural areas need urgent and adequate consideration and attention of the authorities concerned. These problems require top priority otherwise the progress of our infant state will be hampered inspite of ambitious planning. If tuberculosis is not controlled, if filariasis and other helminthic diseases are allowed to grow with the speed they do, if the epidemics of smallpox and the rest are allowed to take the toll they do, if the water pollution is an every day affair, if the antinatal and postnatal care is not provided to every woman of the State, if the malnutrition of the children is not corrected, if there is no school health service in the schools, if the necessary vaccines are not available to the children of the State, if all these matters are not given top priority on "war footing" the population of the State of Gujarat will be sick, disabled and unfit to work either in industrial concerns or in the fields. The production of finished materials as well as that of food is always proportionate to health of the community. Future of State is dismal in which children are not healthy, women are not looked after in the antenatal and postnatal periods. wherein proper attention to sanitation and health education is not given, wherein pure drinking water is not available in very small villages, where sewage disposal is not properly done.

FAMILY PLANNING

It is expected that more family planning centres, urban and rural, will come up in the State of Gujarat. May I very modestly ask, have we prepared the social background ready for the movement? It is this background that is necessary for the success of these centres. In establishing the contacts for the social background, it is the medical man in the rural and urban area who is the keyman. Because our simple folkmen and women, will first consult the medical man on a delicate problem of spacing the children. I appeal therefore, to the Government to take in greater confidence all the members of Gujarat State branch of I.M.A. to make the family planning programme a success. Here I will stress upon each one of our branch secretaries to be active and form family planning centres and do good to the nation.

SPECIAL CARE FOR EXPECTANT AND NURSING MOTHERS, INFANTS AND SCHOOL GOING CHILDREN

Special care to the expectant and the nursing mothers and the infants and the school going children must be impressed upon citizens and the Government. Healthy new borns, healthy infants and healthy school children form the backbone of a strong nation. It is therefore very urgent that health education bureaus should be established whenever possible to cater to the needs of the expectant and nursing mothers, the infants and the children. This problem also can be efficiently tackled by the active branches of State Branch of I.M.A.

Without criticising the medical programmes of the 3rd five year plan may I respectfully submit to utilise the services of the private medical practitioners, particularly the members of the Gujarat State Branch of I.M.A. both in the urban and the rural areas especially when the State of Gujarat is a deficit one for the following activities :—

(1) Family Planning Centres.
(2) Health Education Programmes.
(3) Establishment of more maternity and child welfare centres.
(4) Establishment of Health Statistics Bureaus.
(5) Health Centres in N.E.S. Blocks.
(6) School Health Service.
(7) Anti-T.B. and anti-leprosy Activities.

If the health Ministry of Gujarat undertakes the above mentioned programmes, in the urban and rural areas and of the State, the co-operation of the all members of Gujarat State of I.M.A. will always be forthcoming without obligation and helping hands.

For the sake of information I may mention that Gujarat State Branch of I.M.A. has 57 branches and 1493 members.

There is a general criticism that (allopathic) medical treatment is becoming costlier day by day and beyond the reach of the common mass. I do neither want to discuss the pros and cons of the criticism nor do I want to suggest that every one of us must cultivate the missionary minded spirit of that great Dr. Schweitzer in Africa. I only very modestly request all of you not to encourage various costlier drugs, but with more clinical acumen.

I may very politely draw the attention to the recent levy of the excise charges on several drugs, such an increase every year in the drug prices for the last several years has also contributed to make the treatment very costly and in some cases almost prohibitive.

I do not touch the living index which is increasing day by day and year after year. In the interest of the common man of the society, I request the Governments concerned to take immediate decisions otherwise the last straw will break the back of the camel.

MEDICAL RELIEF CAMPS

We are very happy to note that the medical relief camps are being oranised in different parts all over in the State. May I request the Health Ministry to establish a suitable central relief institution which will organise and co-ordinate activities of these relief camps, so that uniform and definite standards in the said camps are maintained with more economy and efficiency. If such a Central organisation is established by the Health Ministry in co-operation with the service clubs like Rotary, Lions, the Junior Chamber and other social organisations this State Branch of I.M.A. will always heartily and sincerely offer the services of its members. In the end, I appeal to all the members of I.M.A. in Gujarat to follow in the footsteps of our popular Chief Minister who is one of the illustrious past presidents of I.M.A. and who is dedicating every moment of his iife towards prosperity and progress of our infant State. The most appropriate appreciation of his services, by us, will be to take up and pursue one or more welfare activities so dear to him in our State of Gujarat."

SCIENTIFIC SESSION

The Scientific Session was declared open by Dr. G. B. Mankad, an eminent senior physician of Gujarat and one of the past presidents of the Territorial Branch. The main features of this Session were group discussion on diabetes mellitus and symposia on hypertension and rural medicine. Besides this, there were about a dozen short papers on various interesting subjects and the speakers included some eminent members of I.M.A. from Bombay and thus the entire session proved very instructive and interesting and finally, there was a very nice entertainment programme by local artists and members of medical profession of Rajkot.

RESOLUTIONS

The following resolutions were passed at the Conference :

(1) This Conference accords with intense grief the sad demise of the following members of the Gujarat State Branch, I.M.A. :

(1) Dr. J. M. Sanghvi (Ahmedabad)
(2) Dr. H. N. Rawal (Ahmedabad)
(3) Dr. J. B. Desai (Ahmedabad)
(4) Capt. B. B. Shah (Ahmedabad)
(5) Dr. S. J. Bhatt (Jambusar)
(6) Dr. L. R. Mehta (Jamnagar)
(7) Dr. C. A. Martins (Junagadh)
(8) Dr. J. P. Bhamgara (Navsari)
(9) Dr. M. K. Dixit (Surat)

The Conference extends its condolences and sympathies to the members of the bereaved families.

(2) This Conference notes with regret that inspite of repeated offers to the Gujarat State authorities by the Gujarat State Branch I.M.A. State Government has not taken the medical profession into confidence so far as the Public Health and Medical Relief policies of the Gujarat State are concerned. This Conference, therefore, once again appeals to the State Government to take the Gujarat State Branch, Indian Medical Association into confidence in matters relating to the Public Health and Medical Relief. Further, the Conference urges that due representation be given to I.M.A. members in Gujarat State on all Statutory and Corporate bodies.

(3) It is a well-known fact that hundreds of patients requiring specialised medical aid in neuro-surgery, chest-surgery and other complicated eye-surgery require to go outside Gujarat State for such relief. This Conference, therefore, requests the Gujarat Government to establish neuro-surgery, chest-surgery, and eye-bank departments in the hospitals attached to medical colleges of the State so as to facilitate the suffering poor population of the State and help them to save large amount of expenditure and inconvenience they have to undergo for such medical relief outside the State of Gujarat.

(4) Since there is fairly good industrial development in the Gujarat State and since the State Government is endeavouring for the rapid expansion of various industries in the State, this Conference requests the Universities of Gujarat and their faculty of Medicine to introduce at an early date the Diploma Courses in industrial medicine and public health and hygiene; as there is plenty of material available for the students in this State.

This Conference requests the State Government to provide facilities at an early date in the teaching institions for instruction of these courses.

(5) This Conference urges upon the Government of India to suitably amend the Indian Medical Council Act in accordance with the memorandum submitted by the Indian Medical Association in the year 1956 so as to accord due representation to the Indian Medical Association and also provide a common schedule, both for the Medical Licentiates and graduates.

(6) This Conference reiterates the resolution No. 7 passed by the 13th Territorial Medical Conference held at Ahmedabad in June 1960, which reads as under:

"Whereas the health of the students both in schools and colleges are found deteriorating and whereas there is no uniform and regular system of examination, treatment and its follow-up, this Conference requests the Gujarat Government and all other authorities concerned to establish regular health service for students of all ages and directs that the examination of students should be conducted every year and regular records be maintained."

(7) This Conference reiterates the solution No. 11 passed by the 13th Territorial Medical Conference held at Ahmedabad in June, 1960, which reads as under:

"This Conference urges the Public Health Department of Gujarat States to start survey of the preventible diseases in the area of Gujarat State and take such measures as would completely eradicate them."

(8) Since the Gujarat State Medical Council has come into existence, this Conference requests the State Government and the Council to see that medical practitioners possessing adequate qualifications prescribed by the Indian Medical Council for practitioners of modern medical science alone are registered by the Gujarat State Medical Council and that the application for registration are properly scrutinised before finalising the Register for the State.

BRANCH NOTES

ALLAHABAD BRANCH—On 10-4-61 a business meeting was held and Dr. R. D. Kapoor, one of the senior members, informed the house about 10 per cent increase in Excise Duty on non-spiritous and patent medicines of every day use by the Government. It was decided to bring this to the notice of the secretary of U.P. State Branch I.M.A. so that the matter may be taken up with the State Government as well as Central Government. It was done.

On 21-4-61, an extraordinary meeting of the Executive Committte was held and some matters pertaining to the rules of the Association were discussed.

On 13-5-61, a clinical meeting was held at the Military Hospital. The subjects were: (i) Tropical Eosinophilia, (ii) Acute Rheumatic Fever, (iii) Discussion on Heat Effects.

On 15-5-61, the house nominated doctors for Presidentship/Vice-Presidentships for 1961-62 for the Centre and U.P. State Branch.

The General Secretary announced that a sum of Rs. 300/- was collected as donation from some members of our Branch for the family of Late Dr. Y. P. Seth of Pilibhit Branch of I.M.A. It was later sent to the State Secretary, I.M.A., Lucknow.

On 25-5-61, a condolence resolution was passed on the sad demise of the mother of the Vice-President of the branch, Dr. A. Mukerjee.

On 15-7-61, a resolution was passed protesting against the decision of the U.P. Government contained in their Notification No. 4527 A/V-1700/67 of 6th June 1961 putting B.M.B.S. Degree holders of the State Ayurvedic College at par with the M.B.B.S.

The resolution was forwarded to the U.P. State Branch Secretary for necessary action. Dr. Jairaj Behari, one of the seniormost members of the branch, was elected Patron.

On 27-7-61, a general meeting was held. Delegates and Observers for the State Medical Convention at Lucknow to be held on 6th August, '61, were elected.

On 24-7-61, a Film Show was organised by the Association. Scientific Films were shown to the members of the Association.

ALIGARH BRANCH—A meeting of the Branch was held on 25-3-61, in the Hall of M. U. Institute of Ophthalmology, Gandhi Eye Hospital, Aligarh. Twenty members were present. Minutes of last meeting were read and confirmed. Dr. S. K. Garg's case (treatment by Railway authorities) were presented by the secretary and was discussed in the house. A resolution was passed and the secretary was directed to send the copy of the resolution to I.M.A. Central Office and Minister of Railways, Delhi.

Tropical Eosinophilia was the subject for discussion for the day. On one side of the table was a team of three members putting questions to another team of three members sitting on the other side who were replying to the questions. All other members also participated in the discussion. Aetiology, diagnosis and treatment were discussed thoroughly.

A meeting of the Branch was held on 30-5-1961. Minutes of last meeting were read and confirmed. Dr. Rai, M.O.H., Aligarh, gave a talk on the "Problem of public health in our cities, with special reference to Aligarh". Dr. N. S. Sharma, Dr. Satnam Singh, Dr. M. C. Singhal, Dr. Maheshwari and other members asked many questions on various aspects of public health education, vaccination programmes, lack of enforcement of municipal bye-laws and I.D.H. in the town. The House was of the view that there was a definite declining in the interest on the part of administration towards the problem of health in recent years. Specially nothing was being done for public health education. There was no organised attempt on the part of the administration to carry out preventive inoculation and vaccination programmes. For about a population of one lakh and seventy-five thousand people, there are two or three vaccinators in the provision and the result is there are epidemics every year. Public health bye-laws were not being enforced properly and consequently here is no check on adulteration of food stuffs. The Branch offered its services to solve the problem of public health.

A general meeting of the branch was held on 30-6-1961 with Dr. Satnam Singh in the chair.

Dr. R. B. Mathur and Dr. Babbar of Civil Hospital presented the following cases: (i) Case of Bilateral undescended testes, (ii) Case of post injury wasting of Pectoralis major and minor muscles on one side in a boy aged 10 years, (iii) A case of Spastic Paraplegia of slow onset in a lady of 45 years having following features of clinical interest. (a) Dilatation of heart with engorgement of neck veins and enlargement of liver. (b) Enlargement of mediastinal glands as shown by x-ray. (c) Biopsy of one neck gland showing tubercular Lymphadenitis. This case had complete failure with anti-tubercular treatment.

Dr. R. B. Mathur initiated a talk on Family Planning by reading a few lines from an article published in 'Hindustan Times' dated 30th June 1961, on Family Planning. Dr. Speedy of Dufferin Hospital told about her experience and programme of the Family Planning

as carried out by her in Aligarh. Dr. Ravindra Singh D.M.O.H. also explained the programme of Family Planning that has been carried out in the villages of Aligarh District under his supervision. Dr. Satnam Singh, Dr. K. P. Shah, Dr. M. C. Singhal along with others took part in the discussion.

A general meeting of the Branch was held on 29-7-1961. Letter and the booklet concerning the U. P. Government notification about B.M.B.S. were read by the Secretary. Members participated in the discussions and a resolution was passed by the house to be sent to the U. P. Government. Election of the President and Vice-President of State and All-India executive was held.

Members of the Branch protested against the decision of the U. P. Government contained in their notification No. 4257 A/V-1700/61 dated 6-6-1961 putting the B.M.B.S. degree holders of the State Ayurvedic Medical College at par with the M.B.B.S. It may be noted that the standard of teaching of modern medicine, surgery and gynaecology in B.M.B.S. is much lower than that of even a licentiate course in modern medicine. Further it is much below the standard which is laid down as necessary for a general practitioner in modern medicine.

This action of the U.P. Government is in violation of the rules laid down by the Indian Medical Council, in 1956. According to this Act, State register should include only those qualifications as are recognised by Indian Medical Council in Schedule 1, 2 and 3 of Section 15 of the Indian Medical Council Act 1956.

In the opinion of the members of the branch, only better emoluments, as is being practised in other States of India and in other countries can solve the problem of the shortage of doctors for the rural dispensaries. It is regretted that the government instead of solving the problem on rational lines is trying to follow an undesirable shortcut policy.

The members demanded that the notification be withdrawn as early as possible.

BAREILLY BRANCH—A clinical meeting was held on 13-7-61 in the out-patient department of the District Hospital, Bareilly under the presidentship of Dr. C. M. Aga. A condolence resolution was passed on the sad demise of the father of Dr. A. Khan, Civil Surgeon, Bareilly. Dr. Gharst, the famous Surgeon in Orthopaedics from Ludhiana spoke on "Practical Orthopaedics". His lecture was both interesting and instructive. Dr. Chanan Singh and Dr. R. P. Srivastava took part in the discussion that followed.

A clinical meeting of the branch was held on the 25-7-1961, under the presidentship of Dr. P. C. Bhalla, D.M.O., N.E. Rly. Hospital. About 40 members were present including some from the Military Hospital, Bareilly. Dr. Miss Raj Rani Tiwari the speaker of the evening very elaborately discussed the subject thoroughly dealing with the diagnosis and the treatment. The lecture was well supported with illustration of akiagraphic plates and case demonstrations. Surgical aspect of the rheumatic heart disease was discussed by the medical specialist Major Narainum. Lt. Col. Rao discussed the low economic status of the country, its role in the rheumatic heart disease.

A general meeting of the branch was held in the District Hospital O.P.D. on the 28-7-1961. The following agenda was gone through: (1) A condolence resolution on the sad death of Mrs. Dr. M. Khan was passed. (2) Dr. Aga acquainted the members of the correspondence he had with the Telephone authorities regarding listing of medical practitioners name under one heading for the convenience of the public. (3) Elections for the presidentship and three Vice-Presidentship for 61-62 for the U. P. State Branch were gone through. (4) Election for the Presidentship and three Vice-Presidentship for the year 61-62 for the Indian Medical Association were gone through. (5) Delegates for the convention of U. P. State Branch to be held on the 6th of July 1961. Dr. C. M. Aga, Dr. Pratap Singh, Dr. M. K. Goel were nominated. (6) Dr. C. M. Aga talked to the house in connection of the offer of the increased pay scale to the medical professionals. (7) The protest resolution adopted in the emergent meeting of the U. P. State branch held at Lucknow on 15th June 1961 was read out to the house and was passed without any alterations.

There was a film show arranged by the Branch on 2-8-1961. It was quite very impressive and educative and useful. The show was attended by about 60 people including members.

BERHAMPUR (GANJAM) BRANCH—In a meeting held on 5-8-61, the branch resolved to move the Government of Orissa that a Water Works Committee be formed at Berhampur on the lines of the Water Works Committee at Puri, to be in charge of the water supply of the Berhampur Municipality, which is deteriorating.

BHOPAL BRANCH—A meeting of the branch was held on 22-7-61 in the Lecture Hall of Gandhi Medical College. Dr. R. P. Bhargava, vice-president, presided. The occasion was to bid farewell to Dr. M. M. Arora, president of I.M.A., Bhopal for the current year on his transfer to Indore. Tributes were paid to him by the vice-president, Dr. Narendra Singh and Dr. M. Kumar. Dr. Arora gave a suitable reply. The meeting ended with Tea.

CHITRADURGA BRANCH—A clinical meeting of the branch was held at Chitradurga Town Hall on 23-7-61 under the presidentship of Dr. H. S. Lakshminarayana, District Surgeon, Chitradurga. The Chief Guests, Dr. T. S. Jayaram, Dr. M. Gurudas, and Dr. M. A. Hafeez, were welcomed by Dr. Narahari Rao, District Health Officer, Chitradurga. Important circulars of Central, and provincial, Indian Medical Association, were read. President and 3 vice-presidents to Central Office were elected. The following subjects were discussed and passed: (1) To start a rural Family Planning Centre under the auspices of Chitradurga branch and request the State Family Planning Officer to recommend to the Government of India the above proposal. (2) To hold an orientation training in Family Planning at different taluka headquarters and to request the State Family Planning Officer, to approve the same and sanction necessary grants. (3) To adopt the local police colony as Medical Care Colony; the District Surgeon and District Health Officer, were asked to take necessary steps for the same. (4) Steps taken by the secretary in securing a site for Indian Medical Association building at Chitradurga was approved. (5) To hold a Refresher Course for rural practitioners, at Chitradurga by about the middle of November, 1961, and the Executive Committee was authorised to take steps, for the same.

Dr. T. S. Jayaram, spoke about Seven ages of Man, the ailments from infancy to old age. Dr. M. A. Hafeez spoke about the recent trends of the Physiology of Pituitary glands. Dr. M. Gurudas spoke about Seven ages of Man, the Radiological Changes. An interesting Film Show on the following subjects was exhibited: (1) Delivery of Triplets with Low Spinal. (2) Hidden Tear. (3) Haemorrhoids and early Rectal Cancer, (4) Fothergills Operation for Uterine Prolapse. (5) Management of the young Hypertensive.

DHAKURIA BRANCH—A general meeting was held on 8-8-1961 at 44, Station Road, with Capt. B. C. Chakraborty in the chair where elections for Central President and Vice-Presidents were held and change of Central Rules were considered. It was decided to lodge a protest against selection of IMP's for only 3 years in the E.S.I. The meeting terminated to form a clinical meeting where Dr. K. P. Sen, a specialist in Leprosy delivered a lecture on 'Leprosy' which was highly appreciated by all members present in the meeting.

ERODE BRANCH—A meeting was held on 24-6-61, Dr. E. S. Venkataraman presiding, Dr. D. Lakshmanan spoke on Common Surgical Emergencies—Some Aspects. The lecturer covered all important surgical emergencies and their treatment in the course of 2-hour talk. Dr. B. S. Viswanathan was the host.

Another meeting was held on 12-7-61, Dr. L. K. Muthuswamy presiding, Dr. P. N. Rangiah, Director, Department of Venereology, Government General Hospital, Madras, spoke on The Problem of Trichomoniasis in Venereology. The lecturer discussed the intractable nature of the disease and the problem posed by it for successful treatment. He mentioned about the promise held out by a new oral drug in its treatment. 35 doctors attended. Dr. K. V. Kunkikannan was the host.

GWALIOR BRANCH—A condolence meeting was held on 21-7-61 when a resolution deeply mourning "the untimely death of His Highness Maharaja Shri Jiwapirao Scindia, ex-Ruler of Gwalior State and ex-Rajpramukh of erstwhile Madhya Bharat" was adopted all standing in silence for two minutes.

HOOGHLY - CHINSURAH - CHANDERNAGORE BRANCH—The 23rd annual general meeting was held on 24-5-61 at Hooghly. Nineteen members were present. The secretary presented the annual report. The report shows that there were 5 meetings during the year. The following office-bearers were elected : Major N. K. Seal—President; Dr. R. K. Chatterjee, Major P. N. Banerjee—Vice-Presidents; Dr. K. Mallik, Dr. G. Mallik—Jt. Hony. Secretaries; Dr. G. Dey—Hony. Treasurer; Dr. S. Das—Auditor; Dr. K. Mallik—Representative to Central Council; Major P. N. Banerjee, Dr. G. C. Mallik—Representatives to Provincial Council.

JALNA BRANCH—The branch had a clinical combined meeting of the doctors from Aurangabad and Jalna on the 6-8-1961 at Jalna. Dr. Bhandarkar, Dean, Medical College, Aurangabad was the president. Dr. Diwan, Civil Surgeon, Aurangabad presented four interesting surgical cases with illustrations. And also Dr. Lele spoke on "Common Errors in Medical diagnosis in General Practice", and he presented a case of "Polyarteritis Nodosa" to the gathering.

KALYANI BRANCH—The annual general meeting was held on 9-4-61. The following office-bearers were elected : Dr. B. Mukherjee—President; Dr. S. K. Mitra—Vice-president; Dr. S. N. Basu—Hony. Secretary and Treasurer; Dr. B. B. Sen—Asst. Secretary; Dr. S. B. Basu, Dr. S. P. Mazumdar, Dr. A. L. Dutta Chowdhury—Provincial Council Members; Dr. J. Roy Chowdhury—Central Council Member.

A meeting was held on 1-7-61. Dr. H. K. Roy spoke on Coronary Heart Disease. About 45 doctors were present.

A general meeting of the Kalyani Branch, was held on 1-7-1961 to elect president and three vice-presidents of the Centre. Fourteen members participated in the votes.

KANPUR BRANCH—A clinical meeting was held on 7-7-61 when Dr. R. N. Gupta of Lucknow gave an interesting talk on Leprosy and Its Modern Treatment. A discussion followed.

Dr. Gupta explained the U. P. Government's action in recognising B.M.B.S. graduates on the same register as M.B.B.S. graduates and said a protest convention was being organised at Lucknow on 8-8-61.

A clinical meeting was held on 14-7-61. Major Bishnu Singh presided. The following cases were demonstrated : A case of Dextrocardia with Cor Pulmonale and Heart Failure by Dr. D. Paul; A case of Reticulosis by Dr. K. K. Sikka. Interesting discussion followed in which most of the members took part.

A general body and clinical meeting was held on 28-7-61. Elections of President and Vice-President for U.P. and Centre were held.

This was followed by an appeal for the President of the U.P. State Branch to all members to attend the convention at Lucknow to protest against the U.P. Government act to include B.M.B.S. degree in the U.P. Medical Register.

The clinical meeting was addressed by Dr. M. L. Mehrotra on Modern Management of Tuberculosis. Interesting discussions followed.

Independence Day was celebrated on 15-8-1961 at the "Temple of Service" at 8 A.M. by the president, Dr. Miss C. Rohatgi. Sweets were distributed to children.

An interesting Cultural Programme was organised in the evening in which wards of the members took part. Dr. A. K. Gupta, vice-president thanked the Cultural Secretary Dr. Mrs. P. Gokhale and the Secretary Dr. Satwant Singh for organising the show. He also thanked the artistes and the members who helped in making the show a success. Shri C. B. Gupta, Chief Minister, U.P. graced the occasion. Light refreshment and cold drinks were served to all.

KARIMNAGAR BRANCH—A clinical meeting was held on 2-7-61. Dr. Ahmed Hussain presided. Dr. K. N. Waghrey of Civil Hospital, Jagtial, read a paper on The Treatment of Fractures of the Extremities and presented a case of Mixed Parotid Tumour. Dr. Syed Surfaraz Khan of Hqrs. Hospital, Karimnagar, spoke on Headache. Dr. Ahmed Hussain spoke about his experiences in attending to 60 cases of caesarean sections in one year.

Dr. Hussain also appealed to members of the I.M.A. to co-operate with the Medical Department to make the Third Five-Year Plan a success. Two new members were welcomed. Dr. Kazim Hussain and Dr. K. N. Waghrey entertained the members to a dinner.

K. G. F. BRANCH—A clinical meeting was held on 21-7-61. Fourteen members were present. Dr. Syama Sundar Rao presented a case of Splenic Enlargement in a woman aged 30; Dr. B. S. Veerabhadrappa presented a case of Duodenal Ileus; Dr. Rajendra Wats demonstrated a case of Osteoclastoma with pathological fracture in a boy of 10; Dr. M. Punyamurthy presented a cale of Cervical Rib in a man aged 25. Lively discussion followed.

NALGONDA BRANCH—A meeting of the branch was held on 31-7-61 at Nalgonda. Dr. D. Tulsi Das presided. Thirteen members were present. Minutes of the last meeting were read by the secretary and confirmed by the house. Dr. M. C. Narasimhulu, spoke on Infantile Convulsions. At the members took part in the discussion that followed narrating their own experiences in dealing with convulsions in children.

Dr. B. Srinivasa Reddy, president of the Indian Medical Association, Andhra Pradesh State Branch was present on invitation. He addressed the members dealing with various problems facing the private medical practitioners and medical officers in service.

U. P. STATE BRANCH—An emergent meeting of the Working Committee was held in Lucknow on 15-6-61. Dr. Bholanath was in the chair, 14 members attended. The Committee thoroughly discussed the U.P. Government notification putting B.M.B.S. degree holders at par with the M.B.B.S. and passed a comprehensive resolution condemning the action as "patently wrong, unjust and extremely short-sighted" and that the State Medical Council in advising the State Government to adopt the course "acted in contravention of the recommendations of the conference called by the Government of India in 1932" and "the resolution passed on the subject in 1942 by the Indian Medical Council", "ignored the recommendations of the Bhore Committee" and has done disservice both to Ayurveda and Modern Medicine.

The Committee further placed on record that "the State Medical Council has completely forfeited the confidence of medical practitioners of modern medicine" and requested "the Indian Medical Council to review the situation" and requested the U.P. Government to reconsider its decision. "Further the Association warns if the U.P. Government does not make the service con-

ditions of the Medical Profession better, the problem of vacant charges would never be solved." Finally, the Association called "upon the members of the profession to protest and work unitedly against the notification till it is rescinded".

It was further resolved to call a convention of the medical profession in Lucknow to agitate against the notification.

The seventh meeting of the Working Committee of the U. P. State Branch of the I.M.A. was held on 6-8-1961 in the Central Drug Research Institute, Lucknow. Eleven members and 3 co-opted members were present.

In the absence of the president, Dr. K. K. Verma—the vice-president was elected to preside over the meeting.

The following agenda was gone through :—

Proceedings of the last meetings of the Working Committee U. P. State Branch held on April 23, May 27 and June 15, 1961, were confirmed.

The Committee approved the insignia designed by Messrs. Minoo and Dinshaw, Lucknow to be awarded to the past presidents with the notification that the name of the presidents should be engraved on it.

The following were declared elected : president—Dr. R. N. Tandon—Lucknow; vice-presidents—Dr. Pran Nath Gupta—Allahabad, Dr. D. P. Sharma—Meerut, Dr. (Miss) D. Kutty—Lucknow.

The following resolutions passed in the Convention held on August 6, 1961 at the Central Drug Research Institute, Lucknow were noted with great satisfaction and the Working Committee directed the Secretary to carry out the decisions reached.

1. This convention of members of the medical practitioners of the scientific system of this State have received with considerable surprise and bewilderment the decision of the U. P. Medical Council to accept the registration of B.M.B.S. an Ayurvedic degree in the U. P. Medical Register, thus equating it with M.B.B.S. Of all the persons and institutions, the Medical Council ought to have been best informed of the status of the B.M.B.S. course, the purpose and circumstances of its initiation, the details of its initiation, the details of the courses of study and their comparative professional abilities.

Much more surprising still has been the revelation that within two to three hours of the decision of the Medical Council the State Government issued its notifications equating the two degrees. That it was a mere coincidence or an example of the speed and efficiency of the State Government is difficult to believe. Evidently, the Medical Council was briefed and led in the matter by the State Government.

It is unfortunate and most heart rending to find that outside influences can persuade members of the Medical Council to such an extent that they can throw to the winds with impunity all considerations of professional ethics, of preservation of the independence of the Medical Council and of ensuring that the standards of practitioners of scientific medicine are not brought down to the disadvantage of the public. Their decision will let loose amongst public such sub-standard practitioners and would bring the entire profession into disrepute.

This convention places on record its absolute disapproval of the action of such members of the Medical Council as supported their proposal, because the decision so arrived at shall cause damage both to the profession and to the public.

Resolved, therefore, that a copy of this resolution be forwarded to the State Government, the U. P. Medical Council and Indian Medical Council for circulation amongst its members.

2. Whereas the U. P. Medical Council Act, 1917 was enacted at a time when the country was under foreign rule and its provisions are inconsistent with the democratic principles as adopted by the country, as (i) it provides for a large number of members to the U. P. Medical Council to be nominated by the Government; (ii) is applicable only to certain medical practitioners which means those practising "Western Methods of Allopathic Medicine and Surgery", as the subsequent enactment of the Homoeopathic Act and the Indian Medicine Act proves;

And whereas the Medical Council of India Act which provides for registration on an All-India basis and provides against the lowering of standards of scientific medicine through recognition of only such degrees as fulfil the minimum standards necessary to ensure a qualified medical practitioner;

And further, whereas the U. P. Medical Act 1917 is deficient in all these respects and even permits lowering of standards and thus jeopardises the entire medical profession and the life and safety of the public;

this convention of the medical practitioners of U. P. hereby resolves that the State Government is requested to amend the U. P. Medical Act, 1917 immediately to provide for :—

(1) replacement of nomination of members and president of the U. P. Medical Council by election in conformity with democratic methods and principles;

(2) abolition of class distinctions between different classes of practitioners by keeping a common register without any sections or parts for purposes of representation;

(3) acceptance and sticking scrupulously to the schedules attached to the Medical Council of India Act to prevent fall of standards;

(4) discontinuance of the maintenance of a State Register of registered medical practitioners other than the All India Register prescribed under the Medical Council of India Act; and

(5) application of the Act only to practitioners of Modern Medicine only because separate enactments exist for Homoeopathic, Ayurvedic and Unani practitioners;

(6) and banning the practice of modern medicine by all those who are not so registered.

Resolved, further that a copy of this resolution be forwarded to the State Government for favour of immediate implementation.

3. This Convention of the Medical Practitioners of Scientific Medicine appoints a Committee consisting of Dr. B. B. Bhatia—Lucknow. Dr. H. N. Shivapuri—Lucknow, Dr. B. N. Bhalla—Kanpur, Dr. Bhola Nath—Varanasi, Dr. A. Hameed—Lucknow, Dr. M. L. Gujral—Lucknow, Dr. H. S. Pant—Moradabad, Dr. K. K. Verma—Jaunpur, Dr. M. M. S. Siddhu—Lucknow, Dr. Pran Nath Gupta—Allahabad, Dr. C. M. Aga—Bareilly, Dr. R. N. Gupta—Lucknow, to meet the Chief Minister of Uttar Pradesh and request him to withdraw the notification and convey to him the consequences following the recent notification registering B.M.B.S. qualification in the U. P. Medical Register.

Further resolved that this Convention authorises the U. P. State Branch of the Indian Medical Association to take actions along the lines of the views expressed in the Convention.

37TH ALL-INDIA MEDICAL CONFERENCE, 1962, KANPUR

The 37th All-India Medical Conference will be held in Kanpur on January 4—6, 1962 at the G. S. V. M. Medical College under the Presidentship of Dr. R. V. Sathe of Bombay. An ad hoc Reception Committee with Dr. S. N. Saxena as Convener has been formed and the work of the Reception Committee has already started.

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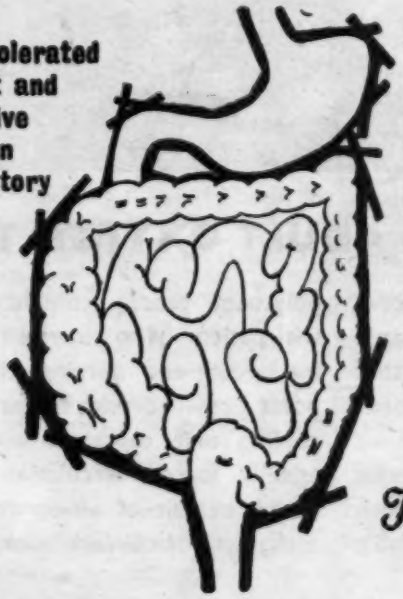

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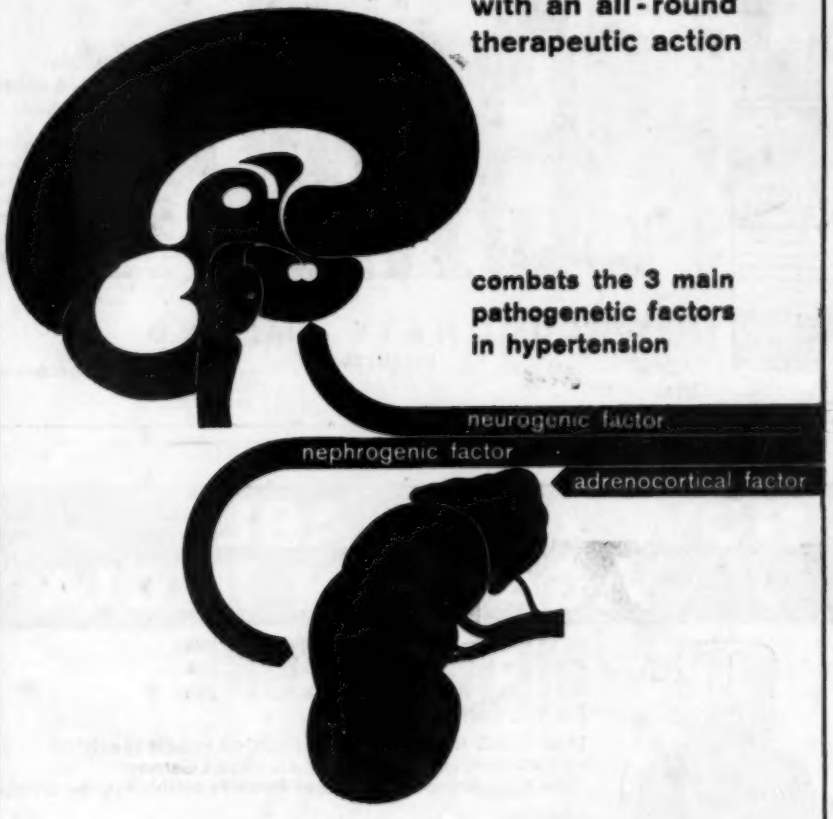

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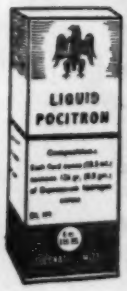

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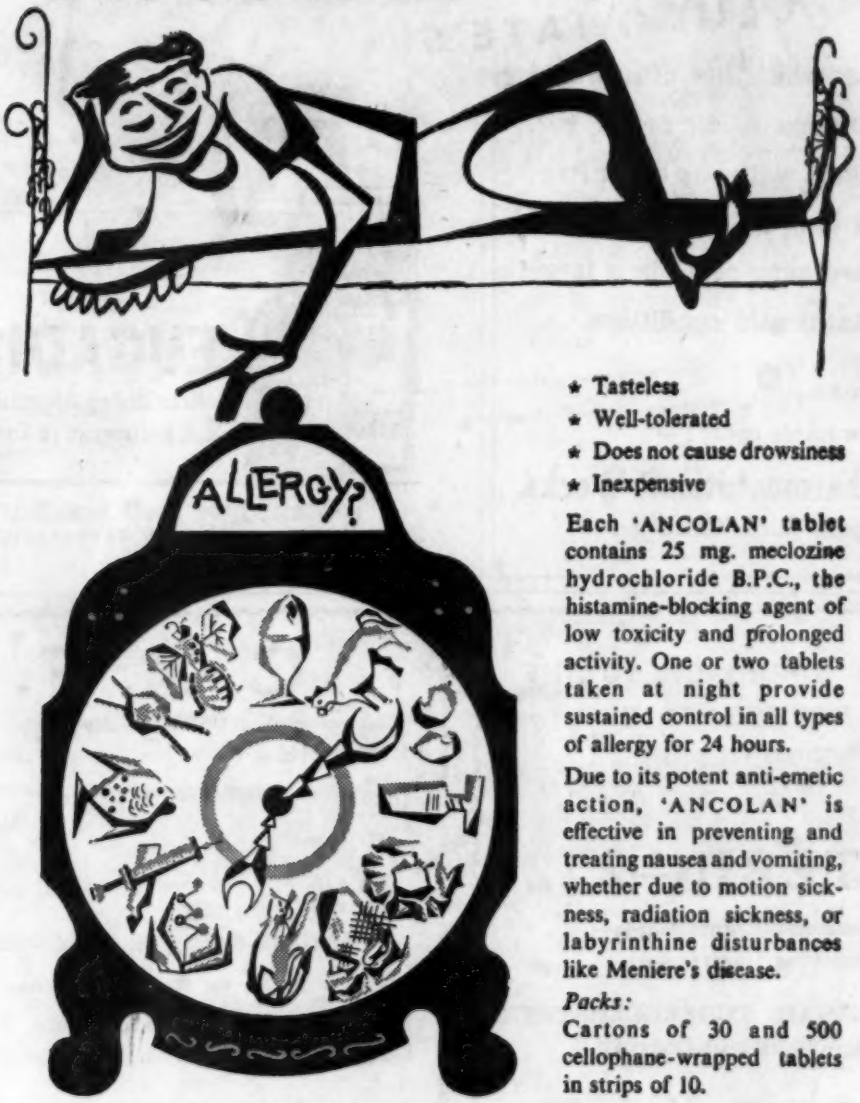

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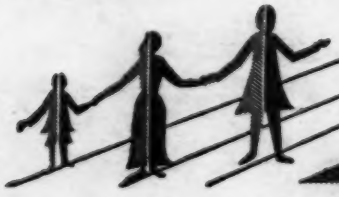

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